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COTTON

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THE MUNGER PATENT

COMPLETE SYSTEM

OF



HANDLING, CLEANING, GINNING AND PRESSING.

DALLAS, TEXAS AND BIRMINGHAM, ALA.

FOR 1890.

Munger Patent
"Cotton" with a checkmark

ROBERTS & SON, PRINTERS AND BINDERS,
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PLAIN TALK ABOUT HANDLING COTTON

IN THIS little book we have endeavored, in plain language, to show:

First, The bad state of affairs which exists now, and which has always existed, to an alarming extent, in the South, with reference to its most valuable product, and the urgent necessity for the immediate adoption and use of a better method of handling, cleaning, ginning and pressing it, and preparing it for market, and to prove the same by experienced Spinners, Carders, Textile Journals, and other eminent authority.

Second, That we have a complete and perfect system of accomplishing this result to the perfect satisfaction of, as well as great profit to, the Cotton producing and handling people of the world, and to prove the same by some of the leading Ginners, Farmers and Merchants of the South as well as Oil Mill and Cotton Factory owners and managers, who have seen, bought, tested and used it to their perfect satisfaction, and who are willing and ready to testify to the same.

Respectfully,

Munger Improved Cotton Machine M'fg. Co.

Dallas, Texas.

R. S. MUNGER, Birmingham, Ala.

OUR COMPLETE SYSTEM

CONSISTS of one machine, which takes the cotton out of the wagon or bin, elevates, cleans, distributes, gins, trumps and presses it, and delivers it a perfect bale of perfectly ginned cotton without any handling whatever. We claim to-day, and have always claimed, many great advantages over any and all other systems ever offered to the cotton ginning world, all of which we are prepared to verify; among them, we will name, as compared with any system in existence, first:

LESS ROOM REQUIRED

To any practical man this is obvious from a glance at the cuts, even without seeing the outfit at work. The sizes of buildings usually put up for our complete outfit will verify this, which are for one 70-saw gin outfit, 16x32; for two, 16x38; for three, 16x46, and for four gins, 16x54. While 16 feet is wide enough for the building, it costs so little more, they are usually put up 18 feet wide, thereby having a surplus of room. A building of these dimensions, for any other system, was never dreamed of. Now, you ask, what are the advantages or profits gained by this reduction of room required? Our answer is, first,

SAVING IN FIRST COST OF BUILDING

For a 3-70-saw public ginnery, on the old plan, where the lint accumulates upon the floor, and the gins of ordinary length, the usual size of building put up is about 30x50 feet, or about double the size required for ours. This adds from 50% to 75% to the first cost of building alone. All this saving of room is accomplished with us, first, by the compact shape in which our gin stands are built, and second, by the fact, that our Revolving Double Box Press does away with the necessity of the room for the accumulation of lint behind the condensers.

There are several other advantages gained by this reduction of room, as accomplished by *our style of gins*, especially in public ginneries, running two or more stands. For instance; three of

our 70-saw gins occupy about nineteen feet in length, allowing ten inches space between them. The same three 70-saw gins of the old style, or any other make, allowing the same space between the stands, would require about twenty-six feet, or an addition of six feet. What does the addition of six feet involve? you ask. First, an addition of six feet to the length of the gin building, as stated before, which you may calculate for yourself, but which amounts to \$100 to \$300, according to the style and class of building you decide to put up. Second, an addition of the same six feet to your distributor, which means not only the additional first cost of the distributor, but a greater wear and tear of belt, and of power required to run it, which, though very small, is worthy of consideration, and an addition of six feet that the cotton has to be conveyed by the distributor belt. Third, an addition of six feet to your lint flue, provided you want to use that most valuable feature of our system. This involves not only the additional first cost of the lint flue, but an addition of six feet that the last gin has to blow the lint cotton, which is a very important item; for, while a good gin, *properly constructed*, and speeded as to brushes, will blow the cotton this additional six feet, yet it will not do it with the same ease and satisfaction that is the result of cutting off the six feet. Each additional foot in length of common flue, causes that much increase of friction of the lint in the flue, and unless there is a proportional increase of gins and brushes, it will not work well. Fourth, in running either two, three or four stands, with our gins, *the labor of only one man* is required. Now, with three gins of other make, the ginner is compelled to travel six feet every time he walks from one end of the gin to the other, and while this does not amount to much, if done only once, or even a dozen times, yet, when he is compelled to do this from morning till night, day after day, and week after week, it signifies many a weary step, and many miles of hard work during the ginning season. By the use of our gins, all this extra labor is saved, and thereby permits his closer attention to the gins, and a consequent result of more and better work for the gins; and for a row of four, five or six gins, this feature is still the more important.

The labor saved by the whole system is too evident to need more discussion. Suffice it to say, that we have two gin outfits, where two men do both the ginning and pressing, and in some instances where the same labor can run three gins and do the

pressing. However, in the busiest part of the season, it is economy to use two men and a boy. By the use of our Elevator, Distributer, and system of ginning direct into our Revolving Double-box, Self packing Press, all handling of either cotton seed, seed cotton, or lint cotton, is entirely done away with.

THE DUST NUISANCE

Who has not experienced the terrible effects of the dust and filth, in the ordinary ginning establishment, upon the health and comfort of the operatives? Ordinarily, one who follows the business can last but a few years, at most, and, in fact, but a season or two, unless he has naturally a strong constitution. Experiencing the evil effects of the dust upon the health of the operatives, was one incentive that led to the invention of our system. With our complete outfits, no such results are known, as they are as clean and healthy as any ordinary manufactory, and even more so than the cotton mill. By a proper location and construction of the building, it may be kept as clean as a dry-goods store. The dust and trash are separated to a great extent, especially by our Class B, or best grade of Elevator, and blown out of the gin room. The suction not only separates the dust from the seed cotton, but draws in any light floating particles of dust that may be flying about and expels them from the room, and in hot weather, the heated air is also exhausted, to a great extent, from the upper part of the building, and expelled from the room, thereby making the room dustless and the temperature more agreeable; and as the first period of the ginning season is in the hottest summer months, this is of some importance. The dust flues from our condensers are extended out through the roof of the building, carrying the fine dust and short lint entirely out of the building, while, with the ordinary plan, it is either allowed to fly around the gin room, or spouted beneath the floor, only to make the lower room unbearable, besides causing serious wear on the journals and machinery below. *Our lint* cotton falls directly into the Press box, while with others, it has either to be picked up by hand or swept and tramped around under feet. We use only one condenser for any number of gins, while others use the same number of condensers as there are gins. Even supposing our condenser made no less dust than others

there being only one instead of a number, would reduce the amount of dust. From the above, it certainly is evident that with our system the *business is more healthy and pleasant*.

CLEANING COTTON.

As our system stands pre-eminently alone in its capacity for cleaning cotton, it behooves us to try to show why it is preferable to do so, and why, sooner or later, all cotton will be required to be cleaned before it will pay to gin and market it. And as proof we refer you to the articles on this subject in this book, written by eminent scientists in this line. We will make the bold assertion that our complete system is the only method in existence, of handling, ginning and pressing cotton, that cleans it to any practical extent, and is, at the same time, sufficiently economical and practical to cause its adoption and use to any extent. Cotton cleaners, as such, have been known for many years, and cotton cleaning has been recommended and advised—even urged—by cotton buyers and spinners for many years. But there have been two conditions existing, which prevented its being done to any extent. First, there was not enough difference made in the price of cotton cleaned and that which was not cleaned. But since the attention of spinners has been especially directed to so much badly handled and badly ginned cotton, they are seeking and offering better prices for that which is properly handled, cleaned and ginned. Second, all methods heretofore in existence for cleaning cotton required so much extra labor and expense to operate them that the ginner and planter could not afford to adopt or use them. The farmer was not willing to pay the extra price that was charged to run the cotton through them. The cotton had to be picked up and conveyed to the machine by one hand, fed into it by another, and then usually picked up and carried to the gins by another, and then carried from the gins to the press by still another—all of which involved so much extra labor and expense that it made their adoption and use both impracticable and unprofitable. In some instances the cotton was conveyed to the cleaners by drag belts, or other rude contrivances, but from the cleaners to the gins by hand, or the cotton had to be leveled in the feeders by hand, either, or all of which necessitated so much extra cost and labor for the small amount of benefit

usually added to the staple, or profit gained to the ginner or planter, especially in large ginneries, that it was never adopted to any practical extent. Hence the cry of so much badly handled cotton. Our system not only cleans the cotton from the time it enters the pipe in the wagon or stall until it is rolled out a perfect bale, but does the whole thing without any manipulation whatever. Herein lies the cause of its speedy adoption and popularity in those sections where it has been introduced and is well known.

MIXING COTTON

There is no subject of more importance to the value of cotton for making strong and even yarn and cloth than that of "mixing." This will be verified by the letters published herein from prominent spinners and carders. They do not want the bale "mix packed," but they want the cotton "thoroughly mixed through the bale." The lack of this worries them to a great extent. We claim that our complete system is the only means in existence of accomplishing this to perfection. Cotton is usually picked by various hands, at various times, from different locations of the field. There will be one basketful of one grade or length of fiber, and one of another, picked and put in the wagon alternately, and all carried and delivered to the gin or stall in the same rotation, and it is then placed or dropped into the feeder, either by basket or otherwise, in quite the same rotation and condition that it comes from the field, fed into the gin in the same order, ginned into the condenser, picked up from the condenser and put into the press, all in just about the same rotation and condition that it comes from the field. Admitting that the cotton will be mixed to a small degree by the several handlings, the chances are that the ginned cotton is pressed into the bale in *very nearly* the same grades and condition that it is picked and brought from the field. Especially is this the case where there is as much as a quarter or half of a bale of one grade, condition, or length of fiber, and the balance of another, as is frequently unavoidably the case with a great portion of the small farmers, who now constitute the great mass of the cotton growing people. It is a very common occurrence for several distinct grades of seed cotton to be brought to the gin in the same wagon, or in different wagons, to go into and make up one and the same

bale. In some localities it is common to carry half a bale to the gin, and wait several days for the other half to be picked out, during which time a rain falls upon it, or a storm blows it out on the ground, or there is a change of some of the pickers, or a change from one part of the field or patch to another, either one or more of these conditions may cause an entirely different grade of cotton to be carried to the gin to finish out the bale. The rains often fall upon it, either in the patch, pen or wagon; sometimes the cotton worms strike one part of the field before another, and various other circumstances, over which the farmer has no control, necessitate the mixing of different grades of seed cotton into the same bale of cotton. Hence so much complaint from the cotton spinner on that subject. The spinner complains, but the planter or ginner suffers the loss. It is reasonable to suppose that the spinner finds out what the bale is made of before he buys it, and that he makes all due allowance for these defects, including the labor and expense of separating and properly mixing and cleaning, which has to be done before it is of value to him; and consequently the cotton buyer must make the same allowance, or he will be the loser.

There is no separating, mixing, picking, or cleaning machinery that can do this work as perfectly after, as can be done by our complete system before and during, the process of separating it from the seed. By it the cotton is carried through so many different mixers, cleaners and dryers, both before and after ginning, that it is necessarily brought to a uniform grade before it is delivered into the bale. As it is drawn through the suction pipe it is mixed to some extent; then, by the distributor, it is carried into the feeders, and stirred, mixed and distributed from one side of the feeder to the other, and if two or more feeders, to each and every one alike, any overplus being carried over the end into a bin to be re-elevated over again at will, so that the seed cotton is almost thoroughly mixed. Yet, in addition to this, our patent system of ginning and handling the lint cotton from two or more gins through one long flue into one condenser and dropping directly into our Two-box Press, constitutes a very important and valuable feature in this operation. After the seed cotton has been so thoroughly mixed and distributed into the gin feeder or feeders, and ginned in a superior manner, by which the original shape of the fiber is preserved as much as possible, it is then blown by our

gin brushes (which, by the way, have a greater peripheral speed in proportion to that of the gin saws than those of any other gin on the market), through our long flue, until it strikes the drum of the condenser, whereby the fibers are so thoroughly mixed that it is practically impossible for the finest cotton expert to detect variations in the different grades of lint to correspond with the different lots of seed cotton that were brought from the field.

DRYING COTTON

The ginning of cotton that is wet or very damp is a great loss, first, to the planter, next to the ginner, and last to the spinner. Sometimes to the cotton broker, should he buy it not knowing its true inward condition. When the planter and ginner are one and the same, his loss is proportionately greater. Damp or wet cotton, will neither gin nor sample well. It will soon clog the saw teeth so they will not take hold of the lint, and the brush cannot sweep the lint from them, and the gin refuses to work altogether. The roll will stop or break, the seeds that fall through will be covered with lint instead of being clean, and what lint is taken off and carried through the ribs, is wadded or bunched, snarled or kinked or nepped (as it is variously called) to such an extent, that it is utterly impossible to straighten it into its original shape by any system of machinery without great loss. The saws becoming gummed have to be cleaned, involving delay and loss of valuable time. The seeds not being cleaned, cause loss in "turn out," or yield of lint, and so on. Now what is the remedy? Neither the farmer nor the ginner can stop the showers, which sometimes take them unawares in the field or on the road. Our advice is, do not gin wet cotton. We claim that our system is better adapted to drying cotton than any other, but we do not advise you to make too frequent or severe tests of this feature, especially if the cotton has had a recent shower on it; though some of our customers say they can and do gin cotton which was "soaking" wet, and when it was impossible to handle at all by the old methods.

By placing the cotton, however wet it may be, in a bin, allowing it to remain a short time until it has gone through a sweat or heat (not necessarily very hot), then passing it through our system, it will be loosened, dried, cleaned and ginned in a superior

manner. In short, we do not recommend ginning wet or damp cotton, but where circumstances require it, as is often the case, our system will both dry and gin it to a much better advantage than other methods in use.

PRESERVING THE NATURAL SHAPE OF COTTON FIBER

There is no known mechanical means by which the natural shape of a properly matured fiber of cotton can be improved. If we can only preserve the natural shape we have accomplished much.

If the cotton has been carefully picked from the boll, after it has fully matured, free from all foreign substances, such as dust or leaf trash, and free from moisture, there is no system of handling that would improve its condition or shape. The above conditions of picking and ginning however, are practically impossible. Even supposing that the cotton was picked perfectly clean and dry, and delivered to the gin, there is no gin in existence that will separate the seed from the lint without, to some extent, bending and doubling the fiber. Under the ordinary conditions in which the great portion of the cotton is put through the gin, and by being forced or crowded, in order to get as much work through as possible, the staple is very much cut, warped, and otherwise twisted out of shape. These deformities are usually called "neps" or "naps," and are caused either by the condition of the cotton, the imperfections of the machinery, or by the way it is handled, generally the last two. And while we cannot claim to have entirely overcome these difficulties, we do claim to have accomplished that result to a greater extent than is practiced, if now at all, outside of our system.

Taking the average run of cotton, as it is brought from the field and put through the gin, we claim to deliver the fibers freed from impurities, and as nearly as possible in its natural shape. This is accomplished by the drying and loosening process of our seed cotton elevator to some extent, and by the peculiar construction of our gins and brushes, but in the main by our patent lint flue system, by which, even supposing it to be imperfectly ginned, the lint is taken from the saws and blown for a distance of fifteen to fifty feet, according to size of outfit, and given time to expand from the V or doubled form given it by the saws, back into the

original shape in which it was before taken from the boll. Whereas, with other gins, the flues are only from two to four feet in length, and the fiber is whirled through that short distance so quickly, that no appreciable time is given it to straighten out, and it is delivered in about the same condition as it left the saws.

That cotton fiber is elastic is evidenced by the amount of pressure required to press it into a small space; the pressure required to put 500 pounds into a space 27 inches wide, 54 inches long and 28 inches high is usually about 60,000 pounds, while that required to compress the same down to eight inches in height is about 5,000,000, the variations in pressure required being governed by the amount of moisture in the cotton. The less moisture, the more elastic, and *vice versa*.

In order to separate cotton from the seed by saws, the fiber must become doubled or wrapped around the teeth with sufficient tension to pull it from the seed, and in the greater portion of cotton, that known as short staple, the lint clings to the seed with great tenacity, so that in order to be pulled off it must be doubled around and pressed against the tooth with considerable force before it will separate, thereby causing the kinks, twists, neps, etc., mentioned before. Now, as we cannot deny that the lint is more or less doubled or bent out of shape by the saws, nor that the fiber is very elastic, we are bound to admit, that by blowing it through considerable space, shaking and sifting it about and allowing ample time for it to regain its natural shape before being checked and condensed by the drum of the condenser, the shape of the fiber, as well as the sample of lint, is very much improved.

Only a few years ago, comparatively, the condenser for lint cotton, as now almost universally used, was unknown. The gin was placed on the upper floor by the side of a large room which usually extended to the ground. The lint was blown out into this room, which was required to be sufficiently ventilated to allow the air to escape freely and at the same time prevent the escape of the flying particles of lint. This lint room, as it was called, was from twenty to sixty feet long, and the gin usually located near one end. From the gin the lint was blown and distributed the whole length of the building. The heaviest portion, such as neps and that which was mixed with sand and dirt, would drop near the gin; the extreme light particles, dust and cut lint, would

fly about the room and adhere to the walls or the outlets for air, while that which was blown to the far side of the building was invariably straightened out and cleaned, and was always the best sample. As soon as the condenser was adopted it was placed just in the rear of the gin, as it is now, and the consequence was many thought that the condenser was actually injuring the sample of cotton, when in reality it was only preventing its expansion or straightening out. The most ignorant laborer knew where to go to get the best sample in the lint room.

Our system of handling lint delivers it out as near perfect as is possible. It is all blown through the whole length of the flue, the dust, sand and leaf trash being sifted through the bottom, while the fibers, straightened and smoothed, are delivered into the press box.

FIRE RISK AND INSURANCE

Hundreds of ginneries are completely destroyed by fire every year. Notices of such are nearly as common in the newspapers during the ginning season, as that of some poor fellow having his hands mangled or arms torn from his shoulders by the saws of the gin. The cause of the most destructive fires in gin houses, is not alone from the exceeding inflammability of cotton, but mostly from the amount of both seed cotton and lint lying around on the floor, flying about the roof and walls of the building as well as being stored in the same.

In our ginneries, neither of these dangerous conditions of affairs exists, as the seed cotton is fed from the wagon or stall direct to the gins, and the lint cotton ginned direct to the press. In case of accidental fire, (which will occur even with the most carefully guarded outfits) it is very easily extinguished. If there be no cotton, there can be no fire—just in proportion to the amount of seed and lint cotton scattered around will be the danger from fire. With other systems, the seed cotton is stored away in bins, and close to the gins, and the lint cotton is accumulated behind the gin stands while tying out the bale, and in case of fire it flashes like powder and instantly spreads over the whole building, generally burning and frightening the hands away, and in a few minutes the whole outfit is in ashes. With ours, there is no seed cotton scattered over the floor, or in bins close to the gin stands,

and no dust flying around and hanging to the walls and, *most important of all*, no lint cotton is accumulated behind the gins, so that *in case of fire*, it is easily extinguished. Many persons have been severely burned by being caught in a heap of lint cotton, either on the floor or down in the press box, as the flames flash and spread so rapidly that it is sometimes impossible to get out of the lint or press box before being seriously if not fatally burned. With our lint handling system in connection with our Self-packing Double-box Press, we certainly do away with all this risk, as there is no lint cotton on the floor, nor necessity of going down into the press box at all.

Owing to the frequency of gins burning, you would hardly realize the fact that, though we have sold our outfits since 1883, there has never a complete outfit burned up, either with our own gins or one used in connection with other gins. We have sold hundreds of them, every one of which, from the first to the last one, as far as we have heard, is still standing unharmed.

Insurance companies, through their agents and managers, are having their attention called to this fact and are beginning to open their eyes. Several years since we began to call their attention to the safety of our system, as compared with others, but they would pay no attention to our assertions. Now they can see for themselves. Some of our customers refuse to take out policies, preferring to carry their own risk than pay the enormous premiums that the companies are compelled to demand from old style ginneries. But seven years have rolled by, and they see the same outfits standing that we put up at first, and those erected each year since, and they see to their own satisfaction that ours is a safer plan, and have already in many instances given reduced rates to our customers. However, not as yet to the extent that the present showing deserves, and we purpose calling attention more fully, and to a greater number of companies than before, and hope and expect to secure their attention with a proper adjustment of rates to be in keeping with the comparative merits of our system. Some of our patrons have received rates at about one-half that offered to others; others who did not receive such reduction, have carried their own risks. We cheerfully refer to all of our customers on this point. Many who have lived in dread of fire for years, and at last burned up, have put in our system, and now assert that they feel no more uneasiness about fire in

their ginneries than they do with their residences, or other property. We refer with pleasure to Messrs. Addison & Carnes, of Dallas, Texas, who are experienced insurance agents, also Maj. Hu. F. Ewing, also of Dallas, who has had many years experience ginning and handling cotton, as well as insuring gins.

SIMPLICITY

To some people this term may seem at first sight inappropriate to our system. But if you will investigate, however, you will be convinced that it is simpler and easier to operate than the old style. Take a two-gin outfit, for comparison. With the old style the cotton has to be taken up from the wagon or bin in a basket, carried to the gin and leveled off in the feeder by hand. Any ginner well knows that if the cotton is not leveled in the feeder so that it will feed the gin regularly, the gin will break the roll and do its work very unsatisfactorily. All this requires not only much labor, but careful attention. With our elevator and distributor, all you have to do is to feed the cotton to the pipe, and it will be carried to the feeder and leveled off perfectly, without labor or attention whatever. The same may be said of the lint cotton. With the old style rig the lint has to be taken from both or all of condensers and carried to the press by manual labor, being careful to take it away from each condenser, or else it will choke up and separate the lint from each and every condenser between every bale; while with ours, all the labor of conveying the lint to the press is avoided, being only necessary to separate the bales in the gin feeders, and the lint will separate itself as it drops into the press. It has been fully and practically tested that any one capable of running an old style rig successfully, can soon learn to run ours. However, if they should be prejudiced against improvements, or old foggyish in their ideas, the better plan is to employ a practical, common-sense man, even one who may never have run a gin, but who is quick to learn, and he will soon manage it. We know of such being the case, from experience.

DURABILITY

Ordinarily, a cotton gin outfit is calculated either to wear out or burn out within an average of four or five years; and if you do not wear it out, it will wear you out. Some outfits last much

longer, of course, but others give out in much less time. Our machinery is all built with a special view to durability. From beginning to end it is a cleaner, not only of cotton, but of itself. It takes the dust and sand not only out of the cotton, but entirely out of the building, thereby preventing unnecessary wear on the machinery by the sand and grit, and by giving a steady and positive motion, as is customary with our outfits, causes it to last much longer than the old style.

The sand and grit that is usually mixed with the cotton as it comes from the field soon wears out the teeth of the saws and the ribs, as well as all the journals and bearings. The rocks, nails, etc., that are always more or less mixed with seed cotton, get into the gin and break or bend the saw teeth; the bristles of the brush, striking against these hooked teeth, are soon cut off, so they do not strike the saws nor do their work properly. Either or all of these parts soon wear out in old style outfits and have to be replaced, while with our system the rocks, nails, sand, and, in fact, all foreign substances being taken out, causes all the machinery to last longer than otherwise.

BUILDING WITH A VIEW TO ENLARGING

Our system is peculiarly adapted to putting up a certain size gin, with a view to enlarging as future demand may require. For instance, suppose you wish to put up a two-gin outfit at present, and with the probability of adding one or more gins in the future. Suppose you wish to make your calculations to add one additional stand at some future time, you may build your house long enough for the three gin at first; or, if desired to limit first cost, build it just large enough for your two stands, which would be say 16x36, and it will be very easy to add 7 feet in length when desired to put in the other stand. Order the elevator, distributor, condenser, engine and boiler large enough in the beginning for the three gins, and you will have no difficulty and very little expense in turning your two-gin into a three-gin outfit, and so on for any number. If your order is put in for distributor for two gins, with prospect for a third one, the distributor would be sent the proper height for the three gins, and then all that would have to be done would be to add to its length. In order to use a three-gin condenser for two gins, it is only necessary to stop up part of the opening left in it for the lint flue, to make

it fit a two-gin lint flue. Then to change from a two to a three-gin flue, enlarge the part tapering up to the condenser, and move the other section back to the last gin put in and connect the same flues. This is all done with but very little expense, making our system much easier added to than the old style, which is generally done by patch work, and with great inconvenience.

Build your house for the machinery, and not the machinery for your house. In other words, if you have an old rig and want to improve it, it is best to throw away the old machinery and build your house to suit your new outfit than to attempt to patch up your old machinery and building; though we have, in many instances, adapted a complete outfit of our machinery to the old buildings in use, and will continue to do so, where it is to the interest of our customers.

LOSS OF LIFE OR LIMB

We are not in the life insurance business, but we are willing to assert that the risk of injury where our system is used, is much less than with others, and in doing so, we do not wish to encourage carelessness on the ground that there is no danger, for there is always danger in gin (cotton gin as well as other gin). A gin, like a gun, is dangerous without lock, stock or barrel.

We will not discuss the matter of risk from boiler or engine, belting or shafting, as we claim no special advantage in that respect, though we do claim that the opportunities for getting hands and arms mutilated, and frequent loss of life in consequence, are less frequent in operating our gins, being fed by our elevating, distributing and feeding machinery, than where this work is done by hand or otherwise.

The very fact that the gins are fed regularly and perfectly by our system, causes them to run more regularly, and without such frequent manipulation and close attention as is required otherwise. They are not so liable to choke up, in which case the breast has to be jarred up or down, or the cotton stirred with the hand as is frequently done with others. The fact is, our gins scarcely choke at all when properly started and fed by our system. Accidents sometimes occur from raising and lowering the breast by hand, as very few gins have appliances for doing this without catching hold of the lower part of the breast, very close to the lower part of the saws. Our gin has a lever with a comfortably

feeling handle, extending out to the right end, sufficiently far from the breast and saws to run no risk of injury from this source while at the same time allowing you to stand in an erect and comfortable position, and doing that work with perfect ease.

Another source of danger is the vacant space that is usually left just under the lower edge of the breast, and between it and the cross timber of the gins. If cotton seeds lodge upon this piece of timber, or motes upon the front edge of the mote board, as is frequently the case, the inclination is to brush them off with the fingers. This may be done frequently, and perhaps for years, without accident; but when it does come, its results can only be imagined by those who have experienced or witnessed it. The rule among ginner is, not to attempt to do these things with the fingers, but to use a stick or something handy. But sometimes the stick is out of place, and as the hand is still in place, it is substituted, oftentimes with awful results.

To avoid this as much as possible, we place this timber as close to the lower breast as possible, then build the lower breast timber with a projection which extends underneath the saws and entirely closes this space, so that it is impossible to thrust the hands through, either carelessly or intentionally, without first breaking off a part of the breast.

Accidents sometime happen from moving the mote board, as very few gins have means for moving it without getting the hands under or near the saws. We think our plan of doing this simple and perfect. It consists of one single strong bolt, which is attached to the mote board and extended to the front and middle of the gin, with a handle on the end, by which the mote board is regulated to a nicety, and with perfect ease, and without the least possible danger whatever.

Although the newspapers record only a portion of the accidents which occur almost daily, they record enough to show the need of a system that will lessen these dangers.

In our complete system the motes and seeds are taken away by machinery as fast as they fall from the gin, avoiding the danger usually met with in removing them in the ordinary way.

THE BEST IS ALWAYS THE CHEAPEST

In no business is this old adage more true and applicable than in the handling of cotton. The fiber is weak and delicate and is

subject to much rough treatment before it reaches its final destination in the woven fabric.

Any system that not only avoids this bad treatment at the gin-ery, but improves the quality of the product in every operation, should certainly be hailed with joy. This we claim to do from beginning to end. Our machinery costs us much more to manufacture than the old style, but we claim that the small additional price which we are compelled to ask for it over and above the price of the old style, is more than two-fold repaid you by the various benefits and profits which you derive from its use.

DRAWINGS AND BLUE PRINTS

We have complete sets of drawings and blue prints, which we furnish our customers, or our mechanics, to aid them in setting up our outfits. They are on the plan of those shown on pages 17, 18 and 19 of our catalogue, being a greater variety of views and plans and more correct and explicit in detail, by reference to which, together with the information contained in our catalogue and printed directions, any reasonably well posted mechanic can properly put up and start our machinery.

Owing to the cost of these drawings and the great varieties required to supply our demands, we furnish them to our purchasers only. They can be seen in our offices, however, both in Dallas, Texas, and Birmingham, Ala.

YOUR PATRONAGE DOUBLED

By offering suitable inducements, custom will be drawn from a great distance. The cotton planter needs and must have every advantage that can be offered and if you will take his cotton out of the wagon for him, and either buy it from him in the seed at a fair price, or gin it properly and promptly, so that he may go on about his other affairs, he will be induced to go to considerable trouble to reach your gin and thereby increase your patronage.

MOST USED WHERE BEST KNOWN

The history of the beginning and rapid development of our sales is given in the introduction to our catalogue, and a cut of the first outfit put up, in 1883, is shown on inside of back of cover. Although our machinery has been built and sold for seven years,

in the year 1889 about 75 per cent of our sales were made to be used in less than one hundred miles of its home, in Dallas. This is owing to the fact that some of the first sales being made and the machinery used near there served as advertisements for the sale of others, especially so with complete outfits, including our gins. We have several complete outfits in and near Dallas, the results of which compelled the construction of others. Wherever we sell one outfit we sell one or a-half dozen in same section or neighborhood the next year, having as many as three of our complete outfits in one small town and frequently two, and in many instances where only a part of our system was put in at first we have been continually putting in other parts, until now they have the whole system. Many who have put in parts of ours with parts of others, afterward seeing our complete system in use and thoroughly investigating it, have expressed regrets at not buying our whole system at first, and say that, if they had it to do over again, they would certainly do so.

AHEAD OF THE TIMES

It is sometimes said that our system is ahead of the country, or ahead of the times, that it cleans the cotton too well, and so on. Yes, we were told that many times when we put up the first complete outfit in Texas in 1883. Yet if you will examine the record of our customers, and investigate the successful introduction of our system, you will find that it is best thought of, praised and patronized where it is best known. If our system is valuable in one section, or one cotton state, why not another. It is true, we had to wait several years after perfecting the system before even the people who saw it, would adopt it liberally. But now as many have tested and proven its merits and superiority sufficiently, it is folly for you to wait longer for the times to catch up. If the times won't catch up, you leave them behind. You had as well lead as any one. Some must lead while others follow. We propose to lead in furnishing the best. Will you lead in buying and using it?

STORAGE OF SEED COTTON

As each person must be governed in this respect by his own peculiar circumstances, we cannot lay down a plan that would

suit all. The location, construction and dimensions of Cotton House depends on the amount of patronage, number of gins, manner of taking toll, whether buying the seed cotton or ginning for toll, whether located on a railroad or not, and so on. On pages 42 and 43 of our 1890 catalogue, we have shown plans of a house suitable to be separated from the gin house, with stalls, to be used at a custom ginnery. But various modifications of this plan may be used to suit circumstances. See also cut on inside of back cover, and other cuts in catalogue. We have drawings and blue prints, showing more completely, different arrangement and styles of building, which we furnish our purchasers, after they have ordered and furnished us with their views of what they want. But they are too expensive and too few of them to supply only to purchasers.

BUYING COTTON IN THE SEED

Different localities have different methods of tolling or receiving pay for ginning cotton, and no suggestion which we could make would apply to all localities or circumstances.

Some take a part of the seed cotton, which is sometimes weighed out of the wagon and sometimes weighed out of the bin. This method involves considerable expense as well as delay and annoyance, both to the ginner and farmer. Others gin for a certain price per hundred pounds of lint. Others gin for the seed, or a part of the seed, and some furnish bagging and ties. But the best way of all is to buy the cotton in the seed. We admit that this change cannot be brought about at once, but it is fast gaining in popularity. The ginner is ready and willing to accept this method at once, but the drawback is to make it popular with farmers. This is easily done when you show him and prove it to him that you can give him as much for his seed cotton as he can get for it after waiting to have it ginned. It is as annoying and expensive to the farmer to have to wait for his cotton to be tolled and ginned, as it is to the ginner. Time is money to the farmer at this season of the year, and time spent in waiting for his cotton to be ginned should be more profitably spent in gathering and saving his crop. Another seeming hindrance to the speedy adoption of this method is the fact that a large per cent. of the cotton crop is mortgaged to the merchant for supplies. But this is no real obstacle, as it has been clearly proven by experience of those

using our system, that this method is just as advantageous to the merchant, as he only has to enter into the market to buy the seed cotton and send it to the ginner to be ginned. So you see, it is money saved to the farmer, ginner and merchant. Some of our customers with only a limited capital, have adopted this method and find it no trouble to prove these facts to the farmer and merchant, and have created such preference for it among all concerned parties that it would be difficult to return to the old way. They buy the seed cotton and check on the merchant or bank with whom arrangements have been made for the money, and send the baled cotton into market the next day, receive the highest market price for it, and turn proceeds over to the merchant or bank.

It is a rare occurrence now to see one going to mill with a turn of wheat and camping out at the mill until it is ground, as was the custom only a few years ago. Yet, this method of buying the raw material is even much better adapted to the handling of cotton than to the handling of wheat, as you may pick your chances and go to the mill on a rainy day, or dull times, but you are compelled to pick the *fairest day* in your *busiest season* to take your cotton to the gin. We have always predicted this revolution in ginning cotton, and although the change cannot be completed in a day, yet it has already gone so far that any thinking mind can readily see that it is now a matter of a short time. And although our system is adapted to any method or capacity, both small and large, where it is desired to handle cotton cheaply and profitably, yet ours is the only system by which it can be handled to advantage on a large scale. With this end in view we have clung to it from the small beginning when we had to battle with existing customs, until now when everything seems to point to the fact that we were working in the right direction.

HANDLING SEED

In all our complete outfits we use the exhaust air from our elevator to blow the seed to any desired point. We have recommended this plan in connection with our elevators for years, but not until the last year have they been used to any extent. Our patent vacuum feeder (the same that we use in feeding the cotton out of the vacuum box when distributor is not used) is

placed under the seed delivery, and the exhaust from cotton elevator pipe connected to the lower side of vacuum feeder, by which the seeds are fed into the exhaust pipe and blown to any desired point, either into the bin, wagon, car or seed house. We are delivering the seed over a hundred feet in many instances, but the same rule applies to handling seed as to cotton, which is, the farther off you deliver them the more power required. By placing our double elbows, with valves in the pipes, the direction of the seed is changed in an instant, delivering them in one instance into a car, and in another into the seed house, wagon or any other receptacle at will. Where our suction elevator is in use there is no system of handling so perfect, economical, simple, or satisfactory, as our blower system. The power required to handle both seed and seed cotton at the same time, with the same fan, and same air, is only a fraction greater, unless the seeds are to be delivered a greater distance than the seed cotton is brought from. Suppose, for instance, that you draw your seed cotton 75 feet, you could blow your seed for the same distance with only a small additional power. In handling seed in this manner a portion of the dust that is separated from the seed cotton is mixed back in with the seed, but not enough to make it objectionable, or, if desired, screens may be placed in the pipes in such a manner as to separate most of the sand and dirt from the seed, though oil mills have cleaners for that purpose. In any case, however, there is less dust in the seed handled this way than when our elevator is not used, as a great deal of dust and foreign substances are separated in the different operations that never get back into the seed. We have many of these outfits in operation, giving the best of satisfaction. With a line of two or more gins, we use screw or belt conveyor to deliver the seed from the gins into the vacuum feeder; or use our regular distributor, with rubber vacuum feeder wings. Our drawings show different arrangements of seed blowers; but one special good feature of this system is that you can bend your pipe (by easy curves) and carry your seed in any direction, angle or curve, without the trouble usually experienced with any or all other methods.

Owing to the fact that your seed will be of a better quality, and also that you handle them in larger quantities, you should demand the highest price paid for seed. In selecting your seed cotton you thereby select the seed. If the seed cotton is wet, it

is stored until in a proper state to run through our suction elevator and dryer, and by always drying them and keeping them so, there is no danger of their heating or rotting, with serious loss to the oil mills and ginner, as is frequently the case with seed handled in the ordinary way.

Our suction apparatus separates the rocks and nails and other hard substances that often injure the machinery of the oil mill notwithstanding they have machines for separating them, they handle the seed so rapidly, in such large quantities, that it is impossible to always make a complete separation.

By this system you can handle the seed much cheaper than otherwise, as you blow them direct from the gin to the railroad ear, or to the seed storage house located close to a railroad track, from which they are handled very cheaply, or you may blow them back into the farmer's wagon.

SAVING AND UTILIZING MOTES

It has always been, and is to this day, the custom either to throw away the motes, or to throw them in with the lint.

These motes are the small immature seeds which pull through the ribs of the gins, and are covered with short immature lint. A great deal of the sand and dirt which is brushed down from the lint by the gin brush is also mixed in with these motes, so that, as they drop from the gin, they are not very inviting to attempt to derive profit from.

In using our elevator and cleaner there are not so many motes left in the cotton, and they are of a better grade than ordinarily.

However, let them be ever so bad or dirty, we clean and re-gin them, and make from them a grade of lint that sells for a fair price, to be used for paper stock, and many other purposes for which a low grade of lint is used. If you buy the seed cotton from the farmer at a better price than he can get for it after having it ginned on the old style gins, it will make no difference with him what is done with his cotton or how it is handled after he has sold it. Hence you will take the motes as they drop from the gin, and convey them direct to our mote cleaner, which puts them in a proper condition preparatory to being re-ginned at some convenient time in the future. So, instead of either throwing all these motes in with good lint, you should take as much motes out

of the cotton as possible, and clean and ginn and sell them to the paper mill; and in this way you will reap a nice profit from what you have previously wasted, besides gain a reputation for good, smooth sample of lint.

ENGINE AND BOILER

It is good judgment to put in boiler and engine large enough for an increase in your business. If you put up a good ginnery to do public work, and do the best work at reasonable figures, and do it promptly, your custom will certainly increase. This is the experience of our customers. And it is much cheaper to put in sufficient power to meet your future demands than to have to remove it after you find it insufficient and replace it with another. It is difficult to dispose of second-hand machinery of any kind. Besides, there is no economy in working, either a boiler or engine, close up to its estimated capacity.

The power required to run our complete outfit depends to a great extent upon circumstances, such as the manner in which it is handled, the amount of cotton ginned on a given size outfit, the distance the cotton is carried by suction and amount of cleaning, and so on. The more the cotton is crowded through the gins, the more power required to drive them, and the greater the distance the cotton is drawn, or the seed driven by the air, the greater the power required to do that work, and so on. But on an average, say for a bale to ten saws in ten hours, which is the proper speed for good work, the power required is about one and a-quarter horse-power to each ten saws, or for each bale per day, which is seventeen and one-half horse-power for two 70-saws, twenty-six horse-power for three 70-saws, and thirty-five horse-power for four 70-saws. The usual sizes put in are twelve to fifteen horse-power for one stand, twenty for two, twenty-five for three, and thirty horse-power for four gins, though about five horse-power larger is better, as it allows you a margin of power, and will give you more economy and satisfaction in the long run. The boiler is usually placed about fifty feet distant from the gin building to avoid as much as possible any danger from sparks, either from the furnace or smoke-stack. Large boilers with ordinary long stacks may be placed inside a part of the gin building with very little more danger from fire if properly attended. If placed separate, the steam pipes must be boxed in and covered with some

non-conducting material, ordinary motes or sawdust in an air-tight box answering that purpose very well. The engine should be attached to the main shaft, and in our ordinary outfits may be located under the gin stands in the gin building. By so doing power and room is economized, and a better control of the machinery afforded the ginner. A cord should be attached to the lever of the governor, so it may be started or stopped at will by the ginner, without leaving the gins or going down stairs.

Sometimes both engine and boiler are located side by side, at a distance of about fifty to one hundred feet, and engine connected to line shaft and extended to gin house, which does very well. Sometimes they are both placed in connection with the gin building. With our system this plan, though not as safe as when separated, is much safer than the old style, where the seed cotton is stored in and the lint cotton scattered all over the gin building.

Our 8 and 10 gin outfits are operated by automatic engines, and connected to shaft by belt instead of direct connections.

For these sizes special instruction will be given. We have them from the small, plain slide valve ten horse-power to the magnificent one hundred and fifty horse-power automatic, with all modern appliances for heating and purifying feed water.

SIZES OF GINS

Many years ago small gins, from 40 to 50 saws, were mostly used, as they were run by horse power, for which that size gin was best adapted. After the small steam engine was introduced into the ginnery, the larger sizes, such as 70 and 80 saws, at once came into demand. But after a few years use of the large sizes, being run by steam power and often at a break-neck speed, the saw and brush shafts began to wear out of round, consequently out of balance, springing and rattling, thereby giving much trouble and annoyance and necessitating frequent repairs, until gradually many practical ginnermen abandoned the long gins and replaced them with smaller and shorter sizes. But when our gin and system came into market it created still another revolution, as it were, and re-instated the 70-saw as the popular size. The bearings on our gins are on the inside instead of the outside of the driving pulleys, making the distance between them less, and consequently the shafts less liable to spring or rattle, or get out of order. And being only two, instead of three, the journals are

not so liable to get out of line. However, if you are partial to three bearings we will put the outside one on. We consider the outside bearing on the saw shaft not only unnecessary but positively detrimental to any gin, yet with nearly all other gins, it is an absolute necessity, on account of the ordinary means in use for adjusting the saws between the gins. With other gins the driving pulley has a wide face and small diameter, thus making an outside support to the saw shaft indispensable, while with our patent system of running gins, we use a driving pulley with *narrow face* and *large diameter*, making the outside support *positively unnecessary*. As an example of similar construction of bearings and pulleys in other machines, we refer you to the ordinary wood planing machine or surfacer, which has no outside bearing, though the pulley is frequently several inches outside the bearing, and the speed from 3000 to 5000 revolutions per minute, and yet a perfectly smooth motion is required in order to do good work; also to the ordinary roller flour mill, which is of late invention and has the driving pulley, (which is about the same size of our driving pulley) on the outside and the bearings on the inside, just as we place them both.

The same labor will attend to three 70-saw that is required for three 60-saws, and there would be only 22 inches additional length of building needed for the three 70-saws than for the three 60-saws while there would be a gain of from two to three bales per day for the capacity of the ginnersy. These are good reasons for using 70-saw gins.

PROPER WORK FOR A GIN

The proper amount of work for the saw gin to do is a 500 weight bale of lint for each ten saws per day of ten hours. This is a very low estimate at the present rate of ginning. Very few ginneries are satisfied unless they can turn out nearly double that amount. Our four 70-saw outfit will easily gin twenty-eight bales in ten hours at that rate, or a little over thirty bales in eleven hours. This would allow an hour between runs when running nights. This would be 750 bales per month running twenty-five days, or 3,000 bales for four months, and means good work and a good profit.

By referring to a letter from Mr. D. C. Kincaid, of Forney, Texas, you will note that he gins 33 bales per day with three of

our 70-saw gins with five men; and while our gins may be crowded to even greater capacity, yet we wish it understood that our greatest aim is to produce a gin that will turn out the *best grade* of cotton with the *least labor* and *greatest profit* and satisfaction to our customers. We have seen as many as fifteen bales ginned on one gin in daylight, but this proportion cannot be carried out where a number of gins are used, besides the work is always poorly done and a great loss entailed by such overloaded machinery.

VARIOUS RESULTS FROM OPERATIONS OF GINS

Taking the ordinary saw gin for example, consisting of the saws, brush, ribs and roll-box, it is quite impossible for one and the same gin, at the same time, to be the best in all particulars; that is, to make the best sample, best turnout, gin faster and take less power. Inasmuch as all things being equal on same gin, the following rules apply, and are true without argument:

1. Adding to speed detracts from sample (beyond a certain limit).
2. The closer the seed is ginned the poorer the sample.
3. The better the seed is run the more power required.
4. The higher the speed the greater the liability of cutting the fiber.
5. The faster the saw cylinder runs, the smaller the ratio of speed of roll.
6. The tighter the roll the greater the liability of breaking and gutting the fiber.
7. The same gin will gin faster when not cleaning the seed well, than it will when cleaning well.
8. The fewer notes you take out and the closer the seed is ginned, the better the 'turnout,' but poorer the sample.
9. Any good 70-saw gin, if it is run 350 revolutions with a loose roll, will gin seven bales in ten hours, and do it well. The same gin, by tightening the roll and increasing the speed, will gin twelve bales, but to the detriment of the fiber.
10. The high speed retains the seed in the roll longer and gins cleaner, but to the detriment of the sample, and so on.

PRESS POWERS

Our Double-Box Presses are fitted up and running with either

screw, hydraulic or steam cylinder powers, but unless otherwise ordered, we always supply the 5 inch screw power. The most valuable feature of our press, is that of the double revolving boxes, by which a continuous operation is acquired, by ginning a bale into one box while the other one is being pressed out. We have our Double-Box Presses with screw power doing the pressing with perfect ease for four gin stands, and we guarantee it to do the work for six if desired. The screw, when connected and operated as we do with our Double Boxes, does away with the necessity of such fast speed in running up and down. By having the Double Boxes, you avoid any loss of time between bales, the screw being the cheapest, simplest and strongest power yet introduced, induces us to furnish that power in most cases. However, we furnish either hydraulic or direct steam cylinder when desired. With the screw power, the last bale each day may be run up and tied out after steam has run down to a low pressure, while with our steam cylinders, the full head of steam must be kept up until the last bale is tied out. We use the steam cylinder to do our tramping in the box but the tramping ceases when the ginning ceases; and consequently, no extra head of steam is required after the last bale is ginned.

Our theory is, to use a strong and efficient trampler, which will tramp a heavy bale into a short box, and then use a strong and reliable screw power, which will make any weight bale from 400 to 700 pounds, with 10 or 20 pounds of steam if necessary.

ADVANTAGES OF OUR DOUBLE BOX

Suppose it takes four minutes to run up and four or even two to run it down. That would be six to eight minutes to run it up and down. Now, with the Single Box, you have to put the lint into the box by hand (which by the way is even more disagreeable than tramping it in the box.) Then after you have the bale in the box, you run the screw up, tie out the bale, throw it out, put on the bagging and run the screw down again; during all this time the lint cotton has been accumulating on the floor. Then you must commence and put all this bale of lint into the box by hand again, taking up a great deal of valuable time, and perhaps the gins will have finished the bale before you have caught up, causing perhaps some delay even with the gins.

But upon the other hand, with our Double-Box, instead of wait-

ing for all this work and delay, as soon as the screw is down, all you have to do is to revolve the Press Boxes and start it right up again, losing not a moment's delay in putting the lint into the box, giving you ample time, even if it takes your screw five minutes to run up and five minutes to run down, which would give you five minutes to simply put on the ties, and this is ample time even with a slow hand. That would make four bales an hour or forty to fifty per day, with a slow screw and a slow hand. With a good screw power and a quick hand it can be done in ten to twelve minutes, or fifty to sixty bales in ten hours. The same figuring applies to hydraulic power or steam cylinder. The Double-Box doubles the capacity and lessens the labor, fire risk, and room required with any kind of power.

TRAMPING COTTON IN THE PRESS

Every one knows that of all the work about the gin there is none so disagreeable, laborious and unhealthy as handling and tramping the lint. All we have to say is that our Packer will do it practically and successfully.

After several years of labor and careful experimenting we have a perfect Cotton Packer, adapted to either, especially to our Double-Box Press. It is a useless waste of words to mention the necessity for or many advantages gained by the use of such a machine, for every one who has had any experience with ginning cotton knows that well.

One benefit derived from using the Packer, even on the small outfits, is that in the beginning and close of the season, all the work, both ginning and pressing can be done by one man, doing away with the usual necessity of hunting all over the country for hands to pack out a few bales of cotton, or keeping a lot of hands employed when there is not enough ginning to justify it.

COST OF BUILDING AND OPERATING

OUR COMPLETE OUTFIT FOR PUBLIC GINNERIES.— We will explain the plan upon which you can *locate, construct and operate* our ginneries.

LOCATION

Adopt your location most suitable, after a thorough investigation of all the surroundings and circumstances. The principal points to be considered are:

AMOUNT OF COTTON RAISED.

This applies to the present crop, and also to the future prospects. There are some locations in which the amount raised is yearly increasing, while in others the amount is yearly decreasing, (although by the proper use of the natural fertilizers which the cotton crop itself yields the soil may be enriched and brought to its original fertility).

NUMBER OF GINS IN THE VICINITY.

The number, quality and capacity of the ginning establishments in the neighborhood, and then facilities for properly and economically handling and taking care of staple, should be considered.

RAILROAD FACILITIES.

Previous arrangements should be made with railroads before you locate on their lines at all.

SIDETRACK FACILITIES.

You will want, if possible, to place your plant on a sidetrack of sufficient length to handle the open cotton, cotton seed, and baled lint. You should unload the cotton from the wagon or ear direct by machinery, and reload both the seed and the bales in the same way without any handling whatever.

COMPRESS FACILITIES.

At points where there is a compress, proper arrangements

should be made with the company for economically compressing and handling your bales.

COST

The amount invested in your plant should depend entirely on the circumstances of the case, such as the amount of cotton raised in the section of country contiguous, the prospective amount to be raised in the future, the number, capacity and quality of gins in the vicinity, etc.

A FOUR SEVENTY-SAW OUTFIT.

Lot, building and fence, scales, engine and boiler, shafting and pulleys, belting, four 70-saw gins, feeders, condenser, flues, self-packing double box press, suction elevator, cleaner and distributor, will cost about \$6,000. Capacity, 30 bales in 11 hours; 750 bales in 25 days. Of course these figures limit the lot and buildings to cheap location and material.

THE MACHINERY

An outfit of our machinery costing \$4,000, which includes engine, boiler and all shafting and belting, will gin 3,000 bales of cotton during the ginning season. The lots and buildings would be added to that, and the price of them would vary with different localities. But on an average \$6,000 will complete an outfit that will easily gin 3,000 bales of cotton during the ginning season of say four months, without crowding the machinery, doing good work and improving the sample instead of injuring it.

THE BUILDINGS

May be framed and covered with crimped or corrugated sheet iron, the dimensions, construction and relative location of same being governed by circumstances, such as capacity of machinery, amount of cotton stored and size and shape of lot. We have some gin houses of brick, but the iron is generally used, being much cheaper and about as safe with our system. But don't forget to look out for comfort, as far as practicable, and locate your gin building with gins fronting south, if possible; or, if not, east or west comes next. The beginning of the ginning season is usually very hot and the close very cold weather. By locating the gin building as above you get the benefit of the south breeze

in the hot weather and may be shut off from the north winds in the winter. All these little comforts may not amount to much to you, you may say, as you may not intend to be in the gin house much, but everything that tends to make the ginnery more pleasant and agreeable will enable the workmen either to do more work or to work for less money. Have as much ventilation from the south as possible and as little from the north. Manage to have the press on east or west end, to suit your convenience, but be sure not to have the door through which the bale is rolled, on the *north* side, else the brisk north winds will scatter the lint cotton as it falls from the condenser into the press.

EXPENSE OF OPERATING

This, of course, depends also to a great extent upon circumstances.

The larger the plant the cheaper it can be run in proportion to the amount of work it will do.

One man is required to run one gin stand. The same man can run five on our system.

It usually takes a man to do the weighing for a single gin and the same man can very easily do the same work for five.

It takes one man to tie out the bales for one gin, and the same can tie out the bales for five gins.

It takes one man to fire a boiler for one gin, and the same man can fire a boiler for five gins, and so on.

The amount of skilled labor required to operate our system is less in proportion to capacity than the old style.

This is easily proven. But why is ~~this~~ so? We answer, for the same reason that it takes a less number of skilled workmen to operate a flour mill, for instance, that is fully equipped with a full set of improved machinery for elevating, cleaning, distributing, grinding and packing the wheat and flour, than would be required to do the same work with rude or old style devices, or with no device at all, as is the case in most cotton ginneries.

Just so, when our system is properly constructed and placed in the gin house and belted up, it is easier to look after it than to do all this work with rude and imperfect devices, or with no devices at all and have to handle it by hand.

The fact is, we find it generally safer to secure a trustworthy

practical common-sense man who has had some experience with any ordinary machinery, than one who has had much experience with old style outfits. For it is sometimes possible and even probable that you would secure one so old-fogyish and "wedded" to the "old style" that it is more difficult to train him into the new from the old, than to teach the new man from the beginning. There is usually required to operate

A FOUR SEVENTY-SAW OUTFIT,

One book keeper, weigher and buyer combined.

One ginner.

Two pressmen.

One fireman and engineer combined.

One roustabout, feeder, etc.

Total, six men.

SOME POINTS FOR PROFIT

It is not expected to convince any one of the merits of our system by argument alone for it is expected that each and every one who will be induced to read this with a view of investing will make a thorough investigation from an outside and unbiased standpoint.

Yet it is the intention to point out some of these advantages, and then you may investigate in detail. Suffice it to say that the success we have met in disposing of our machinery, and the universal satisfaction that it is giving to those who have bought it and are using it in the place of other machinery, which they have thrown out and abandoned for the purpose of adopting ours, should, in itself, be very strong evidence of its merits.

PRICE OF YOUR LINT ADVANCED

Your plant should be built with a special view to making the best possible grade of lint and obtaining therefor the highest possible price. To that end, the seed cotton should be properly graded, placing the mixed, with a great quantity of foreign substance, to itself and that which is damp or wet to itself, allowing it a sufficient time to arrive at the right condition to go through our *cleaning and drying machine*. There is no one thing more sadly neglected than this matter. There is as much good cotton ruined by ginning it wet as in any other way.

The cotton mixed with dirt and leaf trash to any great extent

may be separated from the better grades. However, after running through our Cleaner, the cotton will be improved from one to three grades. Yet it is best to separate the different grades before going through the machine to get the best results.

THE GIN SAWS should be given a regular speed, and not sufficiently fast to *break, tear or cut the fibers*. Sand is a cause of cut lint also. By cleaning the sand out we avoid this entirely.

The *density of the roll* has also a great deal to do with the injuring of the fibers.

If the cotton is *crowded* into the cotton box until it is compact or hard, the saws passing through it will break and cut the lint to an alarming extent.

The *shape* of our gin saw teeth are made with a view to smooth sample. The pitch that the tooth passes through ribs, has much to do with sample and has our special attention.

(There has been for some years considerable opposition to the SAW GIN. The trouble is not and never has been with the saw gins, but with the way they are run.)

Instead of holding the seed in the roll box until they are fairly "skimmed," the proper way is to turn them out as soon as the good lint is taken from them.

In order to make a good *turn out* the seed are usually retained in the roll box and rolled round and round until the fine short lint is peeled from it. This process has also the bad effect of picking off particles of the seed and throwing them into the lint. This is even yet customary, to an alarming extent, all over the cotton ginning South.

This is all done for the purpose of getting *quantity* to the detriment of the *quality*. This should be changed.

How can it be done? By handling the staple as it should be handled, and then claim the proper difference in the price of the lint.

By all this improper handling of cotton a few more pounds of short lint is obtained, while it deteriorates the quality of the staple many times the value of the amount gained.

The weight of the short staple, added to the specks cut from the seed, even supposing it to amount to 20 pounds, at nine cents, only brings \$1.80, while the injury to the good staple by being thus dragged in with this worthless short staple and cut lint is much greater than that gained in weight.

This is ~~very~~ plain to the spinner. He experiences the evil effect of mixing this short lint in with the good. It is troublesome and expensive to him, but he is entirely unable to remedy it, (unless he will make a proper difference between staple handled as it should be and that butchered as it is generally done).

Your object should be to show the superiority of your staple, and thereby create a demand for it at a fair price.

The spinners are now ready to make this difference. By reading the articles in this little pamphlet, you can see that our remarks coincide exactly with the leading spinners of the day. And when the fact is thoroughly established with the spinners that you not only aim at an elimination of the dust, sand, leaf trash and ~~spots of seed~~, but also in every movement to preserve the natural composition of the fiber, you will command a ready sale for your product at a good price.

Added to these precautions, you should wrap the bale in such a manner as to protect it from the weather, and at the same time to prevent any waste.

Furthermore, you should have each bale marked and numbered in such a manner that the tag cannot be detached.

This tag should give your name, the number of the bale and date ginned. In this manner you will establish a trade mark, as it were, so that any one will know from whence it came, and you can safely guarantee any bale with your brand on it to be true throughout, as represented on the outside.

Again, in our system the lint is not handled at all or swept over the floor, or trampled under the feet of the operator, as is customary with all others, which is also injurious to the delicate fibers.

Furthermore, you will have no remnants of lint piled up in the corners of the press room to gather dirt, as is so often done in the ordinary ginning establishment, and which is another cause of some of the mixed packed bales.

All of these little precautions amount to a great deal in the profits of the business.

FROM AUTHORITIES ON COTTON.

We refer you to a few articles from the following authorities :

1. Manufacturer's Review, 1887.
2. Textile Manufacturing World.
3. Manufacturer's Gazette.
4. Industrial Reporter, April, 1888.
5. Manufacturer's Review and Industrial Record, June, 1888.
6. Industrial Review.
7. Textile Record.
8. Manufacturers' Record.
9. Hon. Edward Atkinson.
10. New York Cotton Exchange.

These articles are mostly from cotton spinners and carders, who handle the cotton after it is put into the bale and taken to the cotton mill. Some of them have been written very recently, and others several years since, but they all point to the same conclusion. We have culled these from a host of others, which we have in our possession, from various authorities over the United States, to whom we could refer you, but they would only reiterate the general verdict of those which we have produced. We have been watching these demands from the cotton mills for a number of years, and have been constantly striving to attain, and think we have now reached, that perfection in our ginning system sufficient to supply this long-felt want.

We have continually noted the various defects in the methods of handling seed cotton in the South, as pointed out in these articles, and have been as constantly pursuing steps to overcome them and offer a perfect system in their place. Our labors have been in the field, in the gin, and in the cotton mill. We have listened to the farmer's story, to the ginner's statement, and to the spinner's complaint. We have heard the farmer say: "Don't clean my cotton, I get as much for the dirt as I do for the cotton; all I want is 'turn out,' gin the seed clean, whether the sample is good or not," and so on; have seen the ginner pull the mote board front until all of these impurities were carried on with the lint.

Who fault was it? That of no one person. It was the fault of neither the farmer, ginner, cotton buyer or spinner, but of all of them combined. The spinner complained, but still did not make the proper difference between good and bad cotton. The ginner and farmer took no pains to urge the proper difference. The spinner called for cotton cleaners and better gins. They were tried, but soon abandoned, as the extra amount of expense and labor necessary to do this work by old methods were not repaid by a proper difference in price. All this time we were constantly perfecting a system to do this work with very small extra first cost, but with even less labor than that attached to prior methods. *Now the spinners demand better methods* of handling and ginning cotton; they are willing to pay the proper difference, and now we stand ready with a complete and perfect system to supply the demand, one that has been tested for seven years with a constantly increasing demand and popularity, doubling its sales each year, and proven to be the very thing to fill the bill. We have been constantly watching and studying the wants and perfecting a system to supply it. Now we offer it with renewed confidence, realizing that our labors have not been in vain. We offer it as the boon to the farmer, the health and profit to the ginner and the satisfaction to the spinner.

We have stood alone in the fight from the beginning, no one having or offering anything to compete with our complete system. When we ventured to build the first outfit in 1883, complete in principle though rude in construction, the cry was against us, so far as cleaning and preserving the cotton was concerned. All applauded the great saving of labor and other meritorious features, but condemned the fact that it cleaned and improved the cotton. But this objection has been overcome. The cotton from our system is recognized the world over. The cotton buyer, cotton yard master, public weigher and the compress men all recognize it by the touch.

These are facts which can be proven by those who handle the cotton prepared by our complete system, as well as by those who use it.

COTTON.

[From Manufacturer's Review.]

To insure greater strength in cotton yarn, we need, and must have, less broken fiber, and more uniformity of length and diameter of fiber, and freedom from all impurities and foreign substances of every kind, including excess of water, which causes mildew and rot.

During a long series of investigations of the causes of imperfections in cotton fibers and the unevenness of slivers in mill processes, and the various causes of imperfect yarn, I have referred to many causes of bad yarn and made some suggestions for remedies, but of all the various imperfections I have referred to and the necessity of improvement in methods and machinery, there is *nothing now* in the present advanced state of cotton machinery *of more importance* for the perfecting of yarn than *the more perfect condition of raw cotton*. In a recent article I referred to the examination of individual threads, by taking out the twist from many sections and carefully examining the little slivers to find the causes of imperfections. The glass revealed so many cut and mutilated fibers, together with neps made from looped and torn fibers, *which had their origin in the bad condition of the seed cotton before it entered the saw-gin*, that I determined to make an effort to investigate and in a faithful manner present this very important subject to the attention of cotton raisers and parties interested in the manipulation of this valuable staple, for the manufacture of fabrics for the millions of people in our own and other countries.

While we acknowledge many of these imperfections are due to the mills, the great and very important fact remains, the necessity of greater care in cotton culture: In picking, none but matured bolls should be taken; in the care and protection of the seed cotton; in the inspection and assorting of the various grades of length and diameter of fiber which is presented to us with force at every minute examination of some grades of raw cotton, and more especially in such examinations of yarn as are referred to above; in recent examinations of yarn in which I have found frequent fine and coarse places, the coarse bunches or places were made up largely of *short lint and notes, precisely the same as we find in imperfectly ginned cotton*.

In addition to the examination of the slivers with the twist

taken out, the single thread tester was used on short lengths, selecting the class of fine places examined by the glass, and they broke at from three to six ounces. At five ounces to the single thread, it is equal to 25 lbs. to the single lea of 80 threads, when it should break at 57 or 58 lbs. for No. 28 yarn to insure success in the weaving. With a good, well-matured, well-ginned New Orleans "bender," we frequently find an average of 12 to 13 ounces. At 12 ounces we have 60 pound strength to the lea, or $3\frac{1}{2}$ per cent above a very high American standard for good yarn.

The above yarn from imperfectly ginned cotton broke at 57 per cent below the same standard. This will be called an extremely low grade of yarn. It is, but if the reader will examine many samples of the lower grades of cotton, from ordinary to low middlings, he will find much fiber in the condition described by a faithful committee appointed a few years ago by the Louisville Cotton Exchange to examine and report upon the ginning of cotton. The committee found the *best results* with 10-inch saws at 300 *revolutions per minute*, but with an increase of 150 revolutions, the lint and chopped material was largely increased.

At the highest speed the cotton was pronounced to be of little market value. In the lower grades of cotton much worthless fiber and lint is found, and when there is but a small proportion of such cotton in a mixture, the result is what I have found and presented above in proportion to quality of the mixture. It is a difficult operation to take the fiber from the seed in perfect condition, and this fact increases the force of the argument in favor of the greatest possible care of the seed cotton after it is picked preparatory to ginning. If to the short cut fiber and lint there is added much fiber that is immature, then we have the foundation of short, weak, fine places in the threads, and a slipping condition that will not draw well, and the color will not be uniform in the prints, as in any class of goods dyed.

For the year ending September 1, 1886, the cotton crop of the United States is given at 6,550,215 bales of 440 lbs. per bale, and the value of cotton products manufactured as being nearly \$211,000,000 for 1880. If we take the value of raw cotton exported in 1886 alone—\$205,000,000—it would seem that that of itself would be sufficient to stimulate cotton raisers to improve its condition, if possible.

To insure greater strength in cotton yarn, we need, and must

have, less broken fiber and more uniformity of length and diameter of fiber, strength, uniformity, maturity, and freedom from all impurities and foreign substances of every kind, including excess of water, which causes mildew and rot. Bad weather at the time of picking and unfavorable casualties during some seasons are a serious obstacle to good crops. From these causes all must suffer who are interested in the raising or consuming of the product. Good quality of New Orleans fibers are estimated to average a little more than one inch long, and to be $\frac{1}{12}$ of an inch in diameter. By careful counting and weighings, I found about 100,000,000 fibers in a pound of fine, well-matured Texas cotton. The number of filaments to the pound will vary largely with the diameter and length of the staple.

The most beautiful cotton cultivated is the Sea Island. Good Egyptian stands next in the catalogue of classification. Sea Island has a soft, silky feeling when well matured. In good specimens its natural convolutions are quite uniform and its requisite moisture, oil and cotton wax are said to be quite uniformly supplied, which gives it a peculiar soft, silky feeling. A recent writer reduces the number of varieties to eight, and is of the opinion that these can be reduced to four, viz.: *Gossypium herbaceum*, *Gossypium arborescens*, *Gossypium hirsutum* and *Gossypium barbadense*. *Gossypium hirsutum* is represented as a branching plant growing from five to six feet high. Mr. Richard Marsden, in his excellent work entitled "Cotton Spinning," describes this variety as follows: "The young pods are hairy, the seeds are numerous, free, and covered with green down under the long white wool. It is probable that this is the original of the green seeded cotton, now so extensively cultivated in the Southern States of the American Union, and which forms the bulk of the supply from that source." In this variety of cotton the green down not only adheres to the seed, but the longer hairs or fibers adhere quite closely, and this is one of the causes of much mutilated and gin-cut fiber.

THE PICKING SEASON.

It must be borne in mind that much injury is done to the crop by sudden violent wind and rain storms, which are often severe in hot climates. In such cases the planters cannot be regarded as responsible for that which they can not prevent, by the utmost care. The planter suffers loss to some extent in such cases by de-

preciation of the market value of his crop. If the seed cotton is left exposed to the rains and in a dry season to clouds of dust, and some of it is trampled in the earth, the saws of the gin cannot be kept in good working order long because of mud and sand. If too damp, the fiber will be "hooked," lacerated and broken, and much loose, short staple rolled into neps.

I have this day examined a new card, combining several important improvements, which was working well yesterday with a good quality of cotton, but to day with a lot of gin-cut cotton, the slivers are full of imperfections. *The comparative loss in quality is estimated at fully 25 per cent in the two extremes of conditions of the yarn, and the whole is traceable back to the condition of the seed cotton when it entered the saw-gin.* There are other causes of hooked and imperfectly ginned cotton, but the loops found in the above named cards are evidently the result of wet seed cotton at the time of passing the gin.

For the purpose of presenting this subject as intelligently as possible, and its effect upon the quality of the yarn, I have procured fresh specimens of badly looped and started cotton, and have carefully weighed a few grains; then, by the aid of a good glass, have picked the short, gin-cut from the long, and find nearly 25 per cent of short and worthless fiber. In picking out the short from the long we doubtless lost some that would be taken out in some of the processes. This loss would amount to three cents a pound on cotton costing twelve cents per pound. In addition to the above the heavy neps and lint would amount to about one cent per pound more. The sample of gin-cut cotton before me is badly looped by hanging to the saw teeth, and is polished and the twist straightened from the fibers by the friction against the sides of the gin outlet. These small loops are found in the cards. If the card cylinders are large and their periphery surface runs at high speed, the fibers of these loops are sure to get broken up and help weaken the yarn. The minute size of the cotton fiber would seem to be sufficient to warn us not to permit so much severity in manipulations as it is subjected to in the various mechanical operations. Dr. F. H. Bowman, in his very thorough and valuable work, "The Structure of Cotton Fiber," page 23, says: "We may have some idea of the tenuity of the cotton fibers when we remember that 14,000 to 20,000 individual filaments of American cotton only weigh one grain, so that there

are about 140,000,000 to every pound, and each hair only weighs on the average about the $\frac{1}{17000}$ part of a grain, and if the separate fibers were placed end to end in a straight line, one pound would reach 2,200 miles."

The above number of millions of fibers to the pound is larger than is mentioned in another place, but this result will vary much with the length and diameter of the fibers. But we have enough to show us the delicacy of the little staple, to warn us and managers of cotton gins to be careful in the manipulations to leave their product in a more valuable condition for the markets of the world.

Since the annual mill accounts are made up with from 12 to 23 per cent waste, leaving us with low grades of yarn not equal to 21 per cent of the strength of the fibers, we have good reasons for presenting this subject to the friends of progress and improvements in the cotton business.

AGAWAM.

IRREGULAR YARN, ITS CAUSE, AND HOW MUCH OF IT MAY BE AVOIDED.

[From the Textile Manufacturing World.]

It is amusing, to say the least, to read many of the reasons that are given by some of our mill men, in our textile papers, for irregular or uneven work. Most of them have their eyes on any of the departments aside from the one in which they are employed. The majority of them point to the picker room and card room, the overseers of these departments come in for most all the blame, but one wonders how it happens, that picker men, or carders, should be so remiss in their business, in these enlightened days on cotton manufacturing, as to be the cause of so much general trouble in our mills, especially when we have had all the evils connected with picking and carding cotton so elaborately set forth in books, and in all the journals of the day, wherein these heads of departments may exchange their opinions, and give each other all helps necessary for the best management of these two parts of cotton manufacture.

I wish to take an independent position from my own practical experience, and will consider not only one of the places, but all. We will commence at the first and trace through until we get at

that part which hits our corn, no matter which department we may be employed in. And now, long before we get to the mill, away off

IN THE COTTON FIELD,

frequently the fault is found, through circumstances over which no man can have control, for the cotton crop is subject to the various changes of weather in the places where it is grown; that is, if the weather is not favorable, the cotton cannot mature as it should, and the fibers are weak, have not attained that corkscrew form which makes it capable of intertwining and uniting in a firm, elastic thread, as it would if well matured; and though the class of cotton may be of a good stock of seed, like all other of the vegetable or plant kingdom, if not properly matured, cannot be of the same market value. Then there is the picking of the cotton. When the bolls of cotton of different stages of ripeness are too wide apart and mixed together, we cannot expect them to make as good and even work as if there was more care in the selection.

Sometimes on small farms, they are so anxious to get their products into money,

THE PICKING PROCESS

is neglected and in sampling such bales it is quite possible to take out a handful of nicely picked, when the whole of the bale may be terribly mixed, hence irregular yarn. Then there is the ginning process. We know this part of the cotton business is not carried on by a very high paid class of help, and by inattention and inability to manage the machine properly, the fibers are badly cut by the saws; this, no picker or carder, with the very best men in charge, can make into good, even yarn.

Then there is the feeding of

DAMP COTTON

to the opener, this is frequently not the fault of the picker overseer, for he cannot always have his way, but has to make the best of the advantages the mill affords, which in many places are very limited.

A NEW INVENTION CALLED FOR.

[From the Manufacturer's Gazette.]

There is an opportunity now presented to inventors with some knowledge of the facts such as rarely is open to any man.

Wanted, a cotton gin; one which does not abuse the cotton; one that is more positive in its feeding arrangements and with greater facility of doing work properly.

There is an increasing demand to-day for a better grade of cotton. Inventors who would make a success of this must study the cotton question, and in several things must absolutely abandon previous practice. The saw, first of all, doubles the staple or fiber into several sharp turns. This is done suddenly with a great deal of force, and if the cotton is not perfectly dry, the outside of the fiber is torn and its strength is forever gone. What is wanted is something which will take the fibers of cotton from the seed, leave the fibers as nearly *parallel as possible, and without injuring them*. The man who perfects this machinery will have a far more legitimate and quite as valuable a matter in his hands as the telephone or any other invention of the past few years.

If a man can be found who can make this kind of a gin without going into some kind of a stock speculation, or without putting it upon the market until after it is thoroughly tested, that man will not need to do much work the rest of his natural life, unless he attempts to ape some of the bonanza kings or other fungus growth of society. There are a great many questions included in this of the cotton gin. The doors are wide open.

The running of cotton to-day, so far as the saw gin goes, is barbarous, so far as the roller gin goes is not worth considering in the amount of work the roller gin will do, yet the demand is for better cotton. The planters are ready to furnish it. We should suppose the spinners might take a little interest in some of these things, but they are too busy buying cheap cotton.

Who is the man that tackles the job?

RADICAL CHANGES ARE NECESSARY.

[From the Industrial Reporter, April, 1888.]

Another writer to a Southern paper, signing himself "Carder," points out to the Southern cotton-growing and ginning interests the urgent necessity for greater care in sending cotton to mills. He estimates the loss in working cotton on picking and carding 209 bales of 480 pounds to the bale, at 100,320 pounds. The loss on this particular invoice of cotton was as follows :

	POUNDS.
Sacking.....	2,950
Hoop iron.....	1,845
Cotton seed.....	1,174
Fan waste.....	995
Card strippings.....	2,165
Oily card.....	388
Floor waste.....	318
Batting.....	971
Amount.....	10,806

The total loss amounts to 10 per cent, which is 12 pounds per bale, or, at nine and one-half cents per pound, \$6.84, and on 209 bales is \$1,422.72. On the entire cotton crop of 6,500,000 bales, the loss is \$44,530,000, a loss which manufacturers have for years ineffectually sought to avoid. *Radical changes are necessary in the gathering, ginning and compressing of cotton, and in grading, mixing and picking.* Competition will very soon force a reform in all these details. *The subject is one which cannot be set aside. The demands for reform are imperative.*

Uneven Yarn The Cause of it Observations from the Gin and Compress to the Loom.

[Manufacturer's Review and Industrial Record, June, 1888.]

It is a well known fact that good, even cloth cannot be woven with poor yarn. What I mean by poor yarn is this: a yarn rough and full of dirt, uneven in numbers and full of uneven places, with the breaking strength not up to standard. The question is often asked by spinners and weavers: "What makes the yarn so weak, or why is it so uneven in numbers?" It is the purpose of the writer to discuss these points, and in doing so, to endeavor

to show why poor yarn is made, and in order to do this it will be necessary to cover considerable ground. In the first place, it will pay us to devote a short space in this paper to the processes of ginning and compressing.

Previous to the civil war the cultivation and preparation of cotton for the market, both home and abroad, received systematic and careful attention. Then the cultivation and picking was looked after closely by the planters and their overseers. Since the abolition of slavery a new order of things has taken the place of the old system. Now cotton is raised in small lots and gathered without any regard to grading. Lots of cotton from small plantations and farms are gathered and thrown together promiscuously, and in this condition the seed cotton is fed to the saw gin. The cotton is often damp when ginned, and whenever this is the case, the result must necessarily be injurious to the fibers. Cotton bolls, in passing through the process of ginning, ought to be comparatively dry, so that when the saws strike them the seeds may readily be divested of the cotton fiber, the seeds dropping down the hopper while the cotton is carried by a current of air into the condenser, where it settles ready for bagging. If the seed cotton is ginned damp, the seeds cannot be so easily divested of the hairy fibers, and very many of them will not fall into the receptacle prepared for them, but will pass into the pile of cotton. A certain amount of cotton seed, sand, leaf and trash will always be found in cotton, although receiving the best treatment, but the amount is enlarged when the cotton is ginned while damp.

Another serious objection is the loose way in which cotton is fed to the ginning machines by incompetent help. A gin never ought to be forced or run bare. When carrying too heavy a load the speed will fluctuate, and the cotton, when forced through, will be badly cut. From this careless method of ginning an irreparable loss is sustained in manipulating it through the mill, not only in an excessive waste, but in weak and tender yarn as well. Cotton gins, when run at a high rate of speed, will cut nep and mutilate the fibers while being separated from the seed.

The natural variation of the fiber, careless packing and fraudulent mixtures render the task of the cotton buyer exceedingly difficult, and one which requires the most experienced circumspection and careful discrimination, if an even quality of yarn is

to be produced from it. It is not safe to intrust the mixing to ordinary mill operatives, and yet this is too often done.

One of the worst features about adulterating cotton is that of mixing sand with it. For the last few years the brokers have looked after this so sharply that the percentage of sand has been very materially lessened, still there is enough to seriously affect the safety of the staple while in the process of compressing. When we take into consideration the fact that a bale of cotton of 450 lbs. net weight receives a pressure of 5,000,000 lbs., it can be very readily seen that cotton fibers must lie compactly. The object of the compressing is to reduce the size of the bales to the least possible dimensions, so as to occupy the smallest space in railway cars or vessel. Some of the latest improved compresses reduce bales which are ordinarily five feet long, four feet thick and twenty-eight inches in width to a bale of six or seven inches thick. The compressing of the bales is done very quickly. Now with this severe pressure brought to bear upon the cotton fibers, *with more or less sand distributed through them*, they must, to a certain extent, be cut and torn. Cotton fibers are of too delicate a structure to receive such a strain upon them without injuring them to a certain extent.

Cotton A Valuable Industry Points of Interest Pertaining to Gathering, Ginning and Baling.

From the Industrial Review.

The manufacture of cotton fabrics in the United States has become one of its leading industries. It is now estimated that upwards of 11,000,000 spindles are being driven either by steam or water power. These spindles are producing both cotton and woolen yarns. I think it is safe to say that 8,000,000 of these are utilized in the manufacture of cotton yarns. The first processes of handling cotton have a great bearing on the quality of yarn spun. The process of ginning cotton is quite often attended with most injurious effects. In the first place the cotton gin is an ugly machine, and unless properly handled, will cut and bruise cotton fibers to such an extent that their value is very much deteriorated, if not entirely ruined. It must be borne in mind that cotton is picked at intervals all the way from July to December. Heavy rains often fall over the cotton belts in the South and

Southwest. The picking goes on as soon as it clears off, oftentimes, before the bolls of cotton get dry, so that when they come to the gin houses, it is in a damp condition, and yet cotton in this condition is run through a set of gin saws, driven at a high rate of speed. The immediate result of this is to seriously mutilate the fibers when separated from the seed. The greatest care should be exercised in picking, so that it may be brought to the gin-house dry. If at any time cotton is picked damp, it should be thoroughly dried before the bolls are subjected to the severe strain brought to bear upon them while passing between the teeth of the gin saws.

Cotton should never be ginned if containing an excessive amount of moisture, nor when too dry and fluffy. It is well known that a large portion of the cotton crop reaches the gin in one or the other of these conditions. As a consequence, such cotton is badly nipped and cut in ginning. After the cotton is picked, but previous to and including the process of ginning, much loss is caused by careless and unskilled labor. This loss is estimated by some experts to average about one per cent. per pound on the entire crop. Reckoning the crop of 1887 at 6,500,000 bales, the shrinkage of one per cent. per pound would amount to nearly \$25,000,000.

Storage and carelessly picked cotton contains quite a per cent. of foreign substances, such as *sand, leaf and dirt*, and when brought under great pressure, applied in baling, *the grains of seed cut too close*. In ginning foul and damp cotton, not only is the product deteriorated, but *the gin* is, by such use, *materially injured* from the great strain brought to bear on it. In many of the ginning establishments of the Southern and Southwestern States, the system has become forced; that is to say, in order to get through a large quantity, the machines have been run at a high rate of speed. This, possibly, might do, if not carried to an extreme, *providing*, however, the cotton comes to the gin-house *cleanly picked* and well matured. The condition of the cotton as to the amount of moisture there is in it affects the ginning. In fact, it will have to be neither too dry or wet in order to pass the crucial process of separating the fibers from the seed without injury.

It seems to me, from what I have learned, that *a more thorough and systematic method ought to be adopted in the preparation of*

seed cotton before the process of ginning takes place. As a general thing, small ginneries are scattered all through the cotton-growing districts of the Southern States. At these places cotton is brought in from the plantations and ginned regardless, oftentimes, of its condition. Instead of this, *large and well-appointed ginneries* should be established at convenient and favorable points in the cotton-growing districts. These establishments *should buy the cotton in the seed and sell the product.* Let them purchase seed cotton on the plan followed by the great flouring-mills in the West, which buy wheat and corn, and grind it ready for consumption. Cotton bought in this way would, after being gathered, be handled by skilled labor in *important processes*, as it is in the great manufacturing establishment of New England. This would be done to an advantage with a *handsome profit* to those engaged in the business and a *great saving* to cotton growers and manufacturers. Cotton, when ginned, if in proper condition, will come out in the lint room in a perfect shower of silky fibers, weak and unpretentious of themselves, but when combined, possessing a power which sets in motion the mighty wheels of commerce, gives life to countless factory engines and waterwheels, and brings wealth and prosperity to nations. Another reason why great care should be exercised in gathering cotton, is to have it come to the gin free from sand and trash. This defect is not considered in the light it ought to be, in fact, it is heedlessly neglected, and for that reason cotton fibers are very materially damaged, as they are cut and torn by the grains of sand when subjected to the severe pressure necessary in baling. This, I think, is felt more when cotton is baled while in a damp state, as it lies closer.

G. W.

Cotton Doubling and Drawing Cotton.

From the Textile Record

Perfection in the drawing of cotton is affected adversely by various causes.

1st. By bad mixtures of seed before planting; severe rains soon after planting; protracted droughts; ravages of the caterpillars destroying the foliage, and weakening, if not spoiling the plant; picking the cotton before it is fully matured in the boll; *indiscriminate picking of lint, sticks and mud together*

2d. The cotton not being properly protected from rains at the gin houses. If ginned when wet much half-pulverized lint is produced by the overloading of the saws; negligence in the inspection and assorting the cotton of different fields and modes of culture; the mixing of short and long, coarse and fine, unripe and slippery, with well-developed and well-twisted fibers, which, if worked alone, would draw well, and make a nice, strong thread for the loom. The latter would test alone 10 to 12 per cent. above extra quality, but if mixed in equal quantities with the unripe and slippery fiber would be quite certain to drop below extra quality. *Several grades and qualities are frequently found by good experts in handling cotton in the same bale. This not only makes the whole lot draw badly, but makes the yarn very uneven.* In this view of the subject we may see the great importance of thoroughness in mixing cotton in the mills.

For ninety-one years cotton has been chopped and rolled into knots by the Whitney Saw Gin. Many efforts have been made to produce a machine to supersede that machine, but without much success.

Several machines have been on trial which separated the lint from the seed better, but not in sufficient quantity to take the place of the saw gin.

The late Mr. Evan Leigh, E. C., in his excellent work entitled "The Science of Modern Cotton Spinning," says: "There is much difference of opinion amongst practical men as to the number of doublings which ought to be given in the drawing process; it is, however, certain that the more it is doubled and drawn out, the straighter the fibers lie; but by carrying this process too far other evils are produced, viz.: expense is incurred and the material is somewhat weakened. American cotton, as a rule, requires less doubling and drawing in this operation than most other varieties, whether long or short, and where Orleans, etc., is exclusively used, it is recommended that it should be put through two heads only, having eight ends into one, giving 64 doublings in the drawing frames for yarns up to No. 54. In other cottons of more stubborn character, three ends of drawings are necessary, giving altogether 512 doublings in the drawings, for the same numbers."

From personal knowledge of Mr. Leigh the above system of combining many light slivers into one is cheerfully commended to

American manufacturers for comparison with our limited number of heavy slivers, as many of our mills are running their drawing frames. The importance of guarding against too heavy slivers under one roller cannot be too strongly urged for numbers 20 and finer.

(FRIE.)

Some Facts About Cotton—Eight Billion Dollars Drawn to the South Since 1865 to Pay for Cotton.

[From the Manufacturer's Record, Baltimore, 1890.]

Cotton is one of the most remarkable products that enters into the world's commercial and industrial interests. Its production gives the South a very great advantage over any other section of the country. Cotton is always in demand, and its consumption is steadily on the increase. The simple fact that since 1865 nearly \$8,000,000,000 have been brought into the South to pay for cotton, explains in part the marvelous recuperative powers of this section since the war. While bad agricultural methods have made cotton raising unprofitable to many farmers, yet there is no question but that cotton is one of the most profitable crops that can be raised when its cultivation is carried on intelligently on a cash basis. Southern farmers who raise their own foodstuffs, making cotton their surplus money crop, find it a very profitable one, and almost invariably become well-to-do financially.

The South produces about three-fourths of the world's annual cotton crop, but manufactures only about 7 or 8 per cent of what it raises, the balance furnishing the material for work for millions of spindles in New England and in Europe. The total cotton crop of the world now runs from about 10,000,000 to 11,000,000 bales, of which the South raises on an average, of late years, 7,000,000 bales. Upwards of 80,000,000 spindles are in operation in the world, and of this number the South has but 2,000,000, but it should be remembered that in 1880 the South had only 660,000 spindles. The increase in the number of its spindles has been surprisingly great, and the future promises still more rapid growth.

Some facts regarding the production of cotton, its value, and the amount exported, will prove of interest.

COTTON TRADE OF THE UNITED STATES SINCE 1865.

Crop years from July 1 to August 31.	Acreage.	Total crop. Bales.	Total value.	Consump- tion in U. S. Bales.	Foreign Ex- ports. Bales.	Value of Exports.
1865-1866.....		2,269,316	\$ 132,331,113	666,100	1,554,664	\$281,385,224
1866-1867.....		2,007,254	294,153,007	770,050	1,557,054	201,476,423
1867-1868.....		2,519,534	278,618,480	906,036	1,656,816	152,820,733
1868-1869.....		2,700,467	304,810,362	928,374	1,468,889	162,633,652
1869-1870.....		3,122,551	329,466,391	866,160	2,206,189	227,067,624
1870-1871.....		4,532,317	226,091,835	1,110,146	3,169,900	21,327,109
1871-1872.....	8,911,000	2,974,351	271,569,592	1,237,330	1,597,314	180,684,595
1872-1873.....	9,560,000	3,930,508	333,278,121	1,201,127	2,679,986	227,243,069
1873-1874.....	10,816,000	3,170,388	310,063,419	1,303,943	2,816,981	211,223,580
1874-1875.....	10,982,000	3,832,991	272,177,136	1,193,065	2,681,708	190,638,625
1875-1876.....	11,335,000	4,632,313	393,445,168	1,351,870	3,234,244	192,639,255
1876-1877.....	11,500,000	4,474,060	252,692,340	1,428,013	3,030,835	71,118,598
1877-1878.....	11,825,000	4,773,865	255,738,165	1,480,022	3,360,254	180,031,484
1878-1879.....	12,240,000	5,074,155	230,586,031	1,558,329	3,481,004	162,394,250
1879-1880.....	12,680,000	5,761,252	313,606,452	1,784,978	3,885,003	211,535,905
1880-1881.....	16,123,000	6,005,750	356,524,011	1,938,937	4,589,346	247,695,786
1881-1882.....	16,851,000	5,456,048	304,298,744	1,904,535	3,582,622	199,812,644
1882-1883.....	16,276,000	6,919,736	327,938,137	2,076,096	4,766,597	224,921,413
1883-1884.....	16,780,000	5,713,200	288,803,002	1,876,083	3,916,581	197,984,295
1884-1885.....	17,426,000	5,706,165	287,253,972	1,753,125	3,917,972	198,744,802
1885-1886.....	18,379,444	6,575,691	313,723,680	2,162,544	4,336,203	206,879,697
1886-1887.....	18,581,012	6,565,987	298,504,215	2,111,532	4,453,020	205,213,843
1887-1888.....	18,061,897	7,046,833	336,433,673	2,257,217	4,627,502	210,928,551
1888-1889.....	19,058,591	6,338,290	350,000,000	2,314,091	4,712,347	237,775,270
1889-1890.....		17,250,000	530,000,000	1250,000,000
Total.....			\$7,867,113,555			\$5,161,989,736

†Estimated.

These figures are somewhat startling in their magnitude. They show that the aggregate value of the cotton raised in the South since 1865 has been over \$7,800,000,000, and that the value of cotton exported to foreign countries during the same period has been \$5,161,000,000. The great influence which cotton has exerted upon the foreign commerce of the United States can be readily appreciated from these statistics.

It may be asked if \$7,800,000,000 of outside money has gone South since 1865 to pay for cotton, what has been accomplished, and why is the South still comparatively poor? The answer is that the condition of the agricultural interests of this section after the war, due to the extreme poverty of the people at the close of that disastrous struggle, to the system of securing money in advance by mortgaging the cotton to be raised, the exorbitant rates of interest, the purchase of necessity of farm and house supplies on credit at from 75 to 80 per cent more than cash prices, all tended to consume the entire profits on the production of cotton. Until very recently these conditions were against the raising at home of corn, bacon and other necessities, and almost the entire aggregate received for cotton went back to the North for foodstuffs. The lack of manufactures necessitated depend

ence upon other sections for almost every line of manufactured goods, from a pin to a locomotive. A careful student of the history of this section will see that the South was not to blame, except to a limited extent, for this condition of affairs. Gradually the people rallied from the disasters of war and commenced the development of manufactures and the diversification of their farm products. Their "smoke house and corn crib" have ceased to be in the West, and the South is now nearly self-supporting in supplying its consumptive requirements of foodstuffs. Cotton is yearly becoming more and more a surplus crop, and the several hundred millions of dollars which it annually yields will, in the future, largely remain here for the enrichment of this section, instead of going North and West to pay for bacon, breadstuffs and manufactured goods. In this change there is a revolution in the currents of business that must produce surprising results. Added to the one or two hundred millions of dollars of cotton money that have for twenty-five years annually gone North, but which will now remain in the South, will be an equal, or possibly a greater amount brought to the South to pay for the iron, the lumber and the cotton goods that are now being shipped North, the millions that will come to pay for mineral and timber lands, the \$50,000,000 or more that is now paid for early vegetables and fruits, and the great aggregate, reaching probably already \$25,000,000, spent by winter visitors who come South to enjoy its climate. These facts are astounding. They can but impress any one with the mighty change that is now being wrought out in the condition of the South.

That the South, which produces the cotton, is destined to manufacture it, admits of no questioning. The South has the natural advantages necessary for success in this business, and whatever difficulties there may be in the way are easily overcome when practical experience, backed by capital, is brought to bear upon the matter. There may be times of depression, but this will not stop the sure and steady growth of this great industry. Good operatives, it has been said by some, cannot be had in the South, and this section can never hope, so some of our New England friends claim, to do anything more than manufacture coarse goods. But a few years ago the same people were just as ready to claim that cotton manufacturing, even of coarse goods, would never amount to much in the South. Forced now to admit that

Southern mills control this branch of the business, they fall back on the threadbare argument against the possibility of the Southern mills ever successfully competing with New England mills on the finer goods. Before many years have passed they will be forced to abandon this. Every cotton mill that goes into operation in the South helps to make more certain the future supremacy of this section in every branch of this industry. With the increase in this business the number of trained operatives increases, and the skill necessary for the production of finer goods will be found ready at hand when the cotton manufacturers of the South decide that the time has come for devoting more attention to fine goods.

It was but a few years ago when the statement that the South would, in time, control the iron market of this country was ridiculed, and the reply made that, while the South might produce a large quantity of low grade pig iron, it could never hope to compete with the North in the finer, finished products of iron and steel, where an abundance of capital and skilled mechanics would enable that section to still control this branch of the business. At first the South demonstrated that it could make pig iron more cheaply than any other part of this country. Having done this, attention was turned to the building of enterprises for producing the finished goods, and locomotive works, car and car-wheel works, tack factories, stove foundries, hardware factories, nail mills, engine works, saw factories and hundreds of kindred enterprises are daily proving that the South can manufacture every variety of fine products requiring the highest skilled labor. As in iron, so will it be in cotton. When the time is ripe, and that time seems to be at hand, for the South to turn its attention to finer qualities of cotton goods, it will do so, and do it successfully.

In 1880 the census reported \$207,782,868 invested in cotton manufacture in the United States, and the consumption of cotton by American mills 1,570,342 bales, or much less than one-fourth of an average crop. On this basis it would require an investment of over \$800,000,000 in mills to consume our entire cotton crop; so we can form some idea of what the magnitude of the cotton manufacturing interests is. Out of an estimated total of 80,000,000 spindles in the world, the United States has only about 13,000,000, Great Britain having over one-half, or 42,000,000. The total consumption of cotton in the world is from 10,000,000

to 11,000,000 bales a year, of which the South furnishes 7,000,000 bales.

The *Manufacturers' Record* lately compiled, through special reports from cotton mills in the South, a list of all the mills in that section, with the number of spindles and looms in each; and comparing these figures with the report of the census of 1880, we have the following interesting table, showing a most remarkable increase:

States.	July 31, 1889			May, 1880		
	No. of Mills.	No. of Spindles.	No. of Looms.	No. of Mills.	No. of Spindles.	No. of Looms.
Alabama.....	21	131,904	2,414	16	49,432	863
Arkansas.....	5	13,800	224	2	2,015	28
Florida.....	1	1,400	1	816
Georgia.....	73	445,998	10,246	40	198,656	4,493
Kentucky.....	6	45,200	677	3	9,022	73
Louisiana.....	5	60,280	1,584	2	1,096	120
Maryland....	25	175,642	3,536	19	125,796	2,425
Mississippi....	11	69,396	2,054	8	18,568	644
North Carolina	111	386,837	7,851	41	92,385	1,790
South Carolina	44	417,730	10,687	14	82,334	1,676
Tennessee.....	31	126,324	2,170	16	35,736	818
Texas.....		50,868	1,140	2	2,608	71
Virginia.....	14	99,889	2,750	3	44,340	1,322
Total.....	355	2,035,268	45,001	161	667,854	14,323

These figures show that the number of mills now in the South as compared with 1880 has doubled, while the number of spindles and looms has more than trebled, the tendency being to build mills of greater capacity than formerly. From 161 mills having 667,854 spindles and 14,323 looms in 1880 this industry has increased until there are now 355 mills with 2,035,268 spindles and 45,001 looms in the South. As remarkable as is this increase, these figures really do not fully represent the development of this business, for they do not include the spindles and looms of many new mills now under construction, and others upon which work will shortly begin.

The importance of developing this industry cannot be too strongly emphasized. It keeps at home the great wealth produced in manufacturing the South's leading staple. As already shown on the basis of the capital invested and the bales of cotton consumed in American mills in 1880, an investment of \$800,000, 000 would be required to manufacture the entire cotton crop of

this country. Instead of selling for about \$300,000,000 a year, as the cotton crop now does, it would if wholly manufactured in the South, represent about \$1,000,000,000 a year. Cotton mills furnish employment to a large class of labor that must remain idle for lack of work to do, except as this business grows. In every town and city of the South there are hundreds, and in some thousands, of white women and girls anxious to work, while there is no work for them. To give employment at cotton manufacturing, in which they readily become expert, they are enabled to support themselves, and thus to add greatly to the wealth of the community. Mr. John Hill, one of the leading cotton manufacturing experts of the South, has estimated that, of the operatives given employment by the establishment of a cotton mill, at least 80 or 90 per cent are people who before had been unemployed, and hence had added nothing to the productive or wealth-creating power of the State. Formerly idlers—not from choice, but from force of circumstances—they cease to be a drain on others and become self-supporting. This is one of the great blessings which the growth of cotton manufacturing brings to the South.

COTTON SAVING. Extracts From a Paper Read Several Years Ago at a Meeting of the New England Cotton Manufacturers' Association by Hon. Edward Atkinson.

The cotton crop of the United States was, 68 the average, depreciated at least one cent a pound by the bad handling between the field and the factory. One cent a pound in a crop of 6,000,000 is about \$60,000,000. Nearly every one consulted has added to this estimate their testimony that the labor expended in the present bad method of handling is twice or thrice as much as is needed, and that if the whole loss to the planters of the South from waste labor, waste in ginning, waste in baling, waste in transport, waste in compressing, waste in the store itself by package and stealage, and waste at every point could be distinctly computed and tabulated, it would be nearer to two cents a pound, or \$60,000,000 a year. It is one thing to state this case, however, and quite another thing to find a remedy.

GINNING ON A SMALL SCALE.

The process of ginning and baling in these States, Georgia and

Alabama, which are, on the whole, two of the most progressive States of the South, is conducted by one of the three methods:

1. Ginmeries run by horse or mule power.
2. Ginmeries run by steam.
3. A very few run by water power.

The latter may be disregarded. The principal part of the work is done in one of the two methods first named. Class 1 is usually used where the farmer does the ginning for himself or for one or two neighbors. The gin-house is usually a two-story building of rough construction. The cotton is brought from the field in wagons and carried to the upper story to be ginned by means of a ladder. Four mules furnish the motive power. The lint cotton is thrown by a brush into the lint room, which is neither brushed nor swept from one season to another, nor from one decade to another. What encouragement can there be for careful picking when the cotton is to be ginned in such a place?

In the custom ginmeries, the machinery is better and more carefully attended to, and the facilities for handling the cotton are vastly superior to those of the old style. But it is a matter of very grave doubt whether the cotton is turned out in any better condition than in the primitive way. In fact, there is every reason to fear that *it is more injured in these establishments than in the old-fashioned way.* During the ginning season these public ginmeries are always crowded with work, each man desiring to have his cotton carried through immediately and to return home, his chief object being to get the greatest quantity of cotton from the seed which he can possibly obtain. The proprietor of the gin is interested in getting through the largest number of bales, and he works with a view to accommodating his customers and taking the largest toll, rather than with any idea of turning out good and uninjured staple which his customers do not appreciate. He runs his machinery at the highest possible speed and works as close as possible in order to make a large yield of lint. If the truth were known, all "nepped" or over-ginned cotton could probably be traced to gins of this sort.

The representatives of certain railroads have sought information as to the right method of establishing public ginmeries, to be equipped with sufficient capital to buy cotton on the spot, and also to establish their brand by which their cotton shall be known. The representatives of cotton seed on railroads are in many cases

planting, to attach cotton gins to their works and to buy cotton in the seed. It appears that the business of

GINNING FOR TOLL.

gives an ample profit, and will presently lead to improvements, as it becomes apparent that additional profit may be made by improving the condition of the cotton.

Imperfect Handling Injurious to the Interests of the South —Efforts To Cure It Advised.

[From the New York Cotton Exchange.]

The Board of Management of the New York Cotton Exchange have adopted a report relative to the waste in the staple. The report says:

"WHEREAS, numerous complaints have been made about the waste in the staple of American cotton, which has led to the belief in many instances that it is caused by ginning at a high rate of speed and cleaning the seed too closely, thereby breaking the staple, thus lowering its character and value. This exchange would most earnestly call the attention of the planting interest to the evil and ask that efforts be made to cure it. It is quite manifest that lowering the value of cotton by *imperfect handling is injurious to the interests of the South*. Some of the damage complained of is traceable to the imperfect condition of gins.

Farmers should understand that it is the staple of American cotton that enables it to be sold at a higher value than the produce of India, and that *just so much of the staple as deteriorated it will be surely felt in price*. Sand and dust have been found in our crop this year in larger proportions than ever before. *Hence a great reduction in price has been made for it. The adoption of cleaners that would remedy the grievance should become general.*

In conclusion planters should be reminded that more care should be given to baling, so as to *avoid mixing different qualities in the same bale*, which is a source of great annoyance at the mills and leads to reclamations against selling.

WHAT IS OUR COMPLETE SYSTEM?

OR,

WHAT IS THE "MUNGER SYSTEM?"

From the earliest introduction of our system, the suction elevator and cleaner was commonly called, though erroneously, the "Munger system," because the absolute novelty of that method of handling seed cotton made it the most conspicuous. However, we wish it clearly understood that by "our system" is meant not only our Elevator, Cleaner and Distributer, but also our Gins, Feeders, Condenser, and especially our Patented System of ginning from the gin or gins directly into our Double-Box, Self Packing Press.

THE OLD WAY

Up to this time about four-fifths of the cotton picked in the South is ginned in small and very imperfect outfits.

The average establishment is not capable of turning out more than ten bales per day, though there are some of from twenty to forty bales capacity. Those capable of ginning more than that are very rare.

These small outfits require about the same expense to operate them as one on our plan of four times the capacity. These small establishments usually gin for toll, and are generally very much crowded during the ginning season, and in consequence the machinery is put to its utmost speed, thereby injuring and wearing out the machinery, as well as cutting and breaking the fiber. Many of them do not handle more than from three to six hundred bales per year.

Each of them requires a ginner, freman and an engineer, a weigher, and from one to two pressmen. They are usually run by a small portable engine, with steam varying from 50 to 120 pounds, and speed varying to a greater extent, wearing the machinery out rapidly, and greatly injuring the staple. Very few

of farm have means of cleaning the cotton, or of protecting and keeping it so, even if brought to the gin clean.

GINNING FOR PROFIT

With the old style rig, the greater portion of the profits are required to pay the running expenses; or by the time you begin to make a profit your machinery is either worn or burned out. Our system is durable, easily put up, economical in running expenses, does the best work, advances the price of the products, draws patronage by reason of its conveniencies and labor-saving appliances, and consequently is most likely to prove satisfactory to those who want to "gin for profit."

THE INCREASING DEMAND FOR COTTON

The continually increasing variety of new uses for which cotton is being adapted, necessitates a comparative increase in the supply to meet these demands. The great demand and the low price of the staple together, make it imperative that the South adopt better and more economical methods of handling, ginning and preparing it for the market.

LIGHTING GINNERIES

When desired to arrange to run at night, the incandescant light is a very safe and desirable light to use. It can be put in at a very reasonable cost, and will generally give the best results, if the business will justify the outlay of first cost. However, good lamps or lanterns will answer the purpose very well.

With our system the lint is not scattered over the floor as it is in all others; nor the fine fibers hanging to the walls, which makes it practicable to run our system by night, even by closed lanterns, with scarcely any risk of fire.

TRAMPING AND SWEEPING COTTON OVER THE FLOOR

Is very injurious to the staple, as well as troublesome to the ginner. It is almost impossible to handle cotton in baskets without dropping more or less of it upon the floor. There it is trampled under the feet and the seeds crushed, swept around the dirty floor, mixed with all the filth and dirt, and then picked up and

mixed in with the rest of the cotton. Tramping the seed cotton over the floor mashes the seed and causes the hulls and specks to go in with the lint, and the *ginn* to be hulled and lost, making another small but sure loss by lint and custom. These things seem quite small, perhaps, to those who have been accustomed to seeing it done all their lives, but when properly counted amount to a great deal. The same may be said of sweeping and tramping the lint cotton.

THE BASKET'S FAREWELL

Up to the time of the introduction of the methods of handling seed cotton, the matter of securing a season's supply of baskets for the gin was no small thing, and especially so in the public gin, and is say so to those who still cling to the baskets. From ten to twenty five baskets are usually worn out or destroyed during the season, and which amounts to that many dollars in most localities. To save the aching back as much as possible they are frequently dragged over the floor, which soon dilapidates them.

WELL-SHAPED COTTON BALES

Nothing easier with us; and yet how few appreciate the value, or the glimmer of a well-shaped, square, and symmetrical bale of cotton. Go to the cotton gin, or to the warehouse, and behold the sort of things we call round cotton bales, and ask yourself what kind of machine could shape them! The cotton buyers, warehousemen, or commission point out our bales as soon as they see them. They know them by sight as well as by touch. Our bales are 27x51 inches, and are set down to 28 to 30 inches, being smaller for the weights than those usually delivered from other presses. The cotton being ginned into the box regularly, and fastened off by our machine, the layers are evenly distributed, and the cotton presents a smooth surface on the outside of the bale, thereby adding to its beauty. Having a bale of cotton nicely shaped offers some incentive for better covering, and our customers usually take care to throw on thickly packed bales that their bales are well covered with bagging and protected from the weather. The length of our bales permits them being laid across the ordinary wagon, between the wheels, if necessary, without having the ends torn off by the

wheels. They are also of the width recommended by the compressmen as best adapted to their purpose of getting the greatest tonnage in the car or vessel.

LABOR DURING GINNING SEASON

is generally more difficult to obtain, and commands a higher price than at any other season of the year. This is owing to the great demand for labor for picking and gathering the cotton. As soon as the cotton opens there is a rush for the cotton-patch. If you want good labor at the gin, you generally have to offer pretty good inducements in the way of good wages; and especially is this made the more true with old style gins from their extremely dusty and unhealthy condition.

BUYING EVERYTHING TOGETHER

at the same time, at the same place, and from one party or firm always gives better satisfaction than when divided up from first one party or place to another. Our machinery is all designed and built to fit and work together. If left to us, every pulley is properly dimensioned to transmit proper speed, and so with the shafting, belting, bolls—every part being prepared to join together—all shipped, billed, hauled out, put up, started and suited to run together.

BELTING

For our gins and fans, we supply the finest grade of leather belts. Remember that it is not always the thickest that is the best. On the contrary, for fast-running belts, as required for our fans, only the finest grade of single leather should be used. Moderate success has been obtained in some instances from different forms of webb or cotton belt, such as the Gandy, and other sewed and covered belts, but as yet we have received the best results from a good leather. For other purposes it is all a matter of taste—some of our customers use one kind and some another.

PULLEYS

In locations not exposed to great dampness we recommend the split wood pulley for most purposes, where the speed is not great.

They are light, and will generally pull more than the iron, and being split, admits of them being placed on the shaft after it is coupled, and moved from one position to another with much more ease than with the ordinary solid iron pulley. But where great speed is required, and a true and balanced wheel is desired, we furnish a wrought iron rim. For small sizes we prefer cast iron pulleys. We furnish all kinds, selecting that best adapted to the work to be done and the speed to be run.

SCALES

It is a mistaken idea in some persons to locate the wagon scales either under the suction pipes, or just in front of them. It frequently happens that half a dozen or more wagons will arrive at one time, or will accumulate in the yard while the weigher is busy or absent—all waiting to be weighed. The scales should be placed near and convenient to the gin, but located so that any number of wagons, either empty or loaded, may be weighed and driven out of the way. It may be arranged so that after weighing, they may then be drawn up in a line or circle in rotation, and there await their turn, either at the gin or storage rooms. Some who gin for the seed, or for part of the proceeds of the bale, or so much per 100 lbs. of lint, do not weigh the seed cotton at all. But our preference is to weigh all cotton, before and after being ginned, and then you know what you are doing.

BAGGING AND TIES

We have been reading various articles, and listening with much interest to the various discussions and articles on the above subject, but we are unable to decide what the final result will be. There are friends to jute and friends to cotton, and friends to pine straw, and wire cloth, and now comes the cotton stalk. It seems to us that if bagging can be made from the stalk, that will compare in quality and price with jute, that it would be a boon to the Southern farmer. Or if not the stalk, then the cotton itself, provided it can be made and sold as cheaply as jute. At the present writing, this has not been proven sufficiently to cause its use as extensively as jute. Why not use the motes, as we clean and re-gin them, for this purpose? Thus will another unknown industry be added to the South's vast resources.

OUR WITNESSES.

The following letters are from parties who are using our Complete System, including our own Patent Gins. We have had our say; please read what they say; then write to them; then go to see their outfits; then buy one for yourself and be happy:

OFFICE OF THE NATIONAL COTTON OIL CO.,)
PARIS, TEXAS, March 29, 1890. }

The Munger Improved Cotton Machine Mfg. Co., Dallas, Texas:

GENTLEMEN: I am in receipt of your late favor asking for a description of the 6-gin outfit which you furnished for the National Cotton Oil Co., and a statement as to whether the plant gave full satisfaction or not.

The gin building is 18x71 feet, outside measurement, two stories high, ceiled and painted overhead and on sides and ends in upper story, and finished rough, with dirt floor in lower story. The building is covered on roof, sides and ends with corrugated iron, and is located fifty feet west of the oil mill building on a side track of the Texas & Pacific Railway. The engine, 55 horse power, is located in the east end of the lower story of the gin building, and the shafting pulleys and steam cylinder, west of it. In the upper story we have strung out in one line, six 70-saw Munger Gins, six 70-saw-Munger Gin Feeders, one Lint Flue, one 120-saw-Munger Condenser, one Double-Box Steam Cylinder Munger Cotton Press, one Munger Steam Packer, one Munger 6-Gin Suction Elevator and Distributer, and one seed Conveyer. Steam to run this machinery is taken from the boilers in the mill building two hundred and twenty-five feet distant, and no fires or lights are used any nearer the gin building than this. With your Suction Elevators, we draw seed cotton from storehouse in mill building at various points from 100 to 150 feet distant, also take it out of cars on the Texas & Pacific Railway track seventy feet distant, or from wagons. The seed cotton coming from either

place is conveyed directly into a Munger Vacuum box, where the dust and dirt are taken out, and from which it goes into a Munger Distributer, which fills the feeders that supply the gins. We run our *six gins all at once*, and they all gin *into one lint flue*, which conveys the lint cotton *into one Condenser*, which reels it off into one of the press boxes. As the cotton fills the Press Box, by simply pulling a lever, we run your self-packer down on it, and out again quickly and smoothly, and in such manner as not to interfere with or clog the cotton coming out of the Condenser. This operation we repeat as often as may be necessary to make the size bale we want. When one box is full, we turn the press, bringing an empty box around to the Condenser to be filled while the full box is being packed by our Steam Cylinder and the completed bale tied ready for market. The seed as they come from the gins are conveyed by a screw to our seed blower, which conveys them by wind into the seed house above mentioned, or into a car on the other side of it, as we may wish.

We handle everything by steam and *Munger wind* and have no difficulty in conveying seed cotton by your suction from where we have it stored, or from cars or wagons with sufficient rapidity to keep all our six gins running. There is no "nigger in the box" with us, nor none with a scoop rustling to keep the seed out of the way. When we have cars to load with seed we place them over on the railroad track, outside of the seed house, pull out an extension blower pipe, give it the proper angle inside of the car, turn a valve and pay no more attention to it until we have ginned fifteen to eighteen bales of cotton, when we simply turn the slip joint to the other end of the car, and the work of loading goes on until the car is as full as desired, when we draw in our pipe and let the seed rattle into the seed house until another car is placed.

Our *condenser blower engine* runs all the machinery. We unload seed cotton from wagon or car, or take it from our store-room and put the seed into a car or such part of our seed house as we wish, with the same air furnished by the one fan.

Having our boiler *so far from the engine* makes our expenses a little heavier than it would be were they both together under one person's control. As it is, we simply employ for the operation of the entire outfit, the following force: One engineer, one fireman, one ginner, one boy as assistant ginner, two pressmen, one suction tender, and one man as a general utility man. This

force costs us, outside of the salaries paid the engineer and ginner, \$7.50 per day.

We have a complete Munger outfit, and while there are larger outfits in Texas, I know of none as complete in all of its appointments, and I feel safe in saying, *we have the best gin outfit in existence.* This, I know, is saying a good deal, but *I believe it to be true or I would not say it.* The Gins, Feeders, Lint Flue, Condenser, Double-Box Press, Suction Elevator, Seed Blower, and in fact everything in the outfit does its appointed work, and does it well, and the improvements you have made results in giving a *better staple and cleaner cotton* than any other method. We are perfectly satisfied with the entire outfit.

Yours truly,

F. H. BAILY, *Agent.*

Three years ago we fitted up Messrs. Peter Faust & Co., of New Braunfels, Texas, with an outfit of our machinery consisting of Suction Elevator, Distributer, Gin Feeders, Lint Flue System, Condenser and Double-Box Press, to be placed on four good gins of other standard and popular make. Next year we sold them another complete outfit, same as above, with our gins to go in the same building right along by the side of the other row, and now you can *see what they say of our gins.* They have one of the finest equipped ginneries in the world, consisting of eight gins, with provision to run them from a magnificent water power. Their capacity is fifty bales per day with ease and first-class work, or sixty-five bales if necessary. Their custom is gaining rapidly, and they are gaining a world-wide reputation, especially from spinners, for the quality of their products.

OFFICE OF PETER FAUST & CO., GENERAL MERCHANTS, }
NEW BRAUNFELS, TEXAS, JAN. 16, 1889. }

Munger I. C. M. Co.:

DEAR SIRS: We wish to express our fullest satisfaction with all the machinery bought of you. The two complete four 60-saw gin outfits *work to perfection* and *give* no trouble. Farmers are finding out the vast difference in cotton being handled by your system in comparison to the old way. Since having first used

your system we have become more and more convinced that it will take the place of the old way of ginning cotton altogether in the course of time, the advantages offered to the farmer being so evident that everybody sees the difference after a trial. At once is to be seen the convenience of the unloading through the Suction Elevator, and the good effect it has on the *seed cotton to be loosened and cleaned before being fed into the gins*. The long Flue and large Condenser in place of the old condenser close behind the gin is *one of the best features of the system*, and we would not be without it. The increase in value is most apparent in the medium grades, as they are generally raised in Texas. The lower and medium grades are worth at least one-half cent more per pound when handled by your system. *Your gins have given us good satisfaction, being easily handled and making a smooth sample.* They have *many advantages over other gins*, the brush being run by the main belt and the large driving pulley on the gin saw shaft, also the raising of the breast and the adjustment of same. *We prefer them to any other make of gins.* Our success is the best proof. We ginned last season 350 bales, and have ginned up to date this season 1,365, and will gin 300 more, and would have exceeded this considerably if we had had all the machinery ready at the beginning of the season. Wishing you success, we are yours, etc.,

PETER FAUST & Co.

NEW BRAUNFELS, TEXAS, FEB. 12, 1890.

Munger Improved Cotton Machine Mfg. Co., Dallas, Texas:

DEAR SIR: After using your improved machinery for the handling and ginning of cotton for the last three years, we can say that we are better pleased to-day than ever.

We ginned in the season of 1887. 350 bales.

" " " " 1888 1,550 "

" " " " 1889 3,235 "

Total 5,125 "

At the same time we can say that to-day our machinery we bought of you is as good as it was when we received it from you, as the wear of the same is but very small, and with proper care there is no expense for repairs. Wishing you much success the coming season,

Yours truly, PETER FAUST & Co.

EXTRACTS FROM THE REPORT OF THE COMMITTEE OF THE DALLAS FAIR AND EXPOSITION ASSOCIATION. — A SAVING OF \$25,000,000 TO THE SOUTHERN STATES, OR TO TEXAS \$6,000,000.

We, the undersigned Committee, appointed at the Dallas State Fair and Exposition, report that we have thoroughly examined the working of the R. S. Munger's Improved Method of elevating, cleaning, ginning and pressing cotton without labor, and do cheerfully bear testimony to the completeness and perfection with which the several machines perform the work for which they are designed, and commend them to the cotton planters of the South as being far superior to any cotton gin machinery yet invented.

* * * * *

The Munger Gins, as exhibited at your Fair, commend themselves for their adaptability for ginning cotton on his improved system *to-wit*: Strength, durability, simplicity, ease of handling, ease of adjustment and general economy in results, making a good sample and ginning the seed clean.

* * * * *

Mr. Munger's inventions are destined to work a great revolution in the cultivation and ginning of cotton in the South, for his system will effect a saving to them of \$5 per bale on every bale ginned, amounting in the aggregate to \$25,000,000 throughout the Southern States, or about \$6,000,000 *to Texas alone*.

JOHN C. MCCOY,	}	Dallas.
C. E. GILBERT,		
B. F. HAWKINS,		
W. R. LAGOW,		
D. P. HAGGARD,	}	Calvert.
J. H. GIBSON,		
W. G. VEAL,	}	Bryan.
J. L. GARTH,		
<i>Committee.</i>		

DALLAS, TEXAS, Feb. 12, 1890.

Messrs. Munger & C. M. Mfg. Co., Dallas, Texas:

DEAR SIRS: In reply to your inquiry as to how cotton ginned on your Improved Machinery works in our mills, beg to say it *works like a charm*. The Improved Methods you use make the

cotton much more desirable for spinning, as the staple is well preserved and the cotton well cleaned. Works well all the way through, from the breakers to the looms.

We will always give preference to cotton ginned and packed on your machinery, even at an advance in price.

Yours, very truly,

DALLAS COTTON AND WOOLEN MILLS.

S. D. BLAKE, *President*.

FORNEY, TEX., Jan. 17, 1890.

Messrs. Munger I. C. M. Mfg. Co., Dallas Texas:

DEAR SIR: I have been ginning for twenty years and have used some six different make of gins, and as for your make of gins, I am satisfied it is the fastest gin and lightest draft that I ever used, and makes an *excellent sample*. And your machinery for handling seed and lint cotton is a complete labor-saving machinery, as I have handled as many as thirty-three bales in twelve hours, only using five men. As to your Self-Packer, it is the grandest piece of gin work I ever saw, as one man can handle it, putting in thirty-three bales per day regardless of weight. With a short crop with us, I have ginned 1,443 bales, one weighing 750 pounds, one 708 pounds, and I am satisfied I can put 1,000 pounds of cotton in my box with your self-packer.

D. C. KINCAID (Using a 3-70-saw Gin Outfit.)

HOCHHEIM, TEXAS, Dec. 11, 1889.

Messrs. Munger I. C. M. Mfg. Co., Dallas, Texas:

DEAR SIR: I will put in several more of your Gin Stands another year. *Your gins are the best in the world, without any exception.*

J. H. SCHWAB.

WHITERIGHT, TEXAS, Jan. 31, 1890.

Messrs. Munger I. C. M. Mfg. Co., Dallas, Texas:

DEAR SIR: The machinery is the best I have seen in operation. I have got the whole thing complete and will say that it has given satisfaction, and I cannot recommend it too highly for ginning and handling cotton.

B. T. BLANFON.

BEULAH, MISS., Jan. 29, 1890.

Messrs. Munger I. C. M. Mfg. Co., Dallas, Texas :

DEAR SIRS: Your gin outfit sold us is a success, and improves the sample of cotton one-half to one cent per pound. We have much encouragement, which we will write you later about, from people in regard to the outfit. The Stand is all we could ask for, and is well adapted to the use of the worst hully cotton. Brushes have all the capacity we want; the Press and Self-Packer is a complete success. The Seed Conveyer is a fine thing and no limit to its work. We feel satisfied we have the finest ginning outfit there is in the Mississippi Valley. Your Machinery and Stands have all the requisite qualifications and capacity of doing better work, and more substantial than any other make of machinery we have ever known or heard of in the so-called Swamp Country. We trust you may sell many more in here, as you will as soon as people find out what it is.

DEITZ & COURSON (Using a 3-70-saw Gin Outfit.)

PEARSALL, TEXAS, Feb. 22, 1890.

Messrs. Munger I. C. M. Co., Dallas, Texas :

DEAR SIRS: As to your system of ginning and handling cotton, would say I deem it far superior to anything I have yet seen for the business. I cannot see how the principle can be improved upon. I would not take one of the old style ginneries as a gift, if I was compelled to run it. The gins are easily managed; the Feeders give no trouble; the Distributer does all that is required of it, and the Double-Box Press and Steam Cylinder are much the best I have seen; is convenient strong and speedy, as we have pressed a bale and rolled it out in three and one-half minutes time steam was turned on. Wishing you success.

U. S. SCOVILL (Using a 2-70-saw Outfit.)

OFFICE OF OTTO BUCHEL & Co.,
WHOLESALE GROCERS AND COM. MERCHANTS,
BANKING AND EXCHANGE, CUERO, TEX. }

Munger Improved Cotton Machine Mfg. Co., Dallas, Texas :

DEAR SIRS: The third season's work of our new ginery is

about closed and about 10,000 bales of cotton have been turned out, now it may be said that a thorough test of your machines in detail has been established. The conveying of seed cotton by suction in conjunction with your Vacuum Box and Vacuum Feeder and Distributer is a *success beyond contradiction*:

First, in the great *security* from the *risk of fire*; second, in the *easy transmission* of seed cotton; third, in the *freeing* from *sand* and *dust*, loosening and *preparing* every lock of seed cotton for the gin. Your *simple belted gin* offers *many conveniences* and *does good and rapid work*. The Common Flue and Condenser, throwing cotton directly into your Double-Box press is no longer an experiment, but a fixed fact, for performing good and faithful service. Your Double-Box Presses are substantial and rapid, and if hydraulic or any reliable power is used, they will never give trouble. We cheerfully recommend your system and machinery to all progressive ginner. The old rawhide rattle-traps must go.

Yours, very truly,

BUCHER MILLING Co. (Using a 10-gin Outfit for 3 years.)

LISBON, DALLAS Co., TEXAS.

Munger I. C. M. Mfg. Co., Dallas, Texas:

GENTLEMEN: Your machinery is a complete success in all its parts. We are highly pleased with its work for several reasons. It pleases our customers; it *cleans the cotton and makes a better sample* than any other gin machinery we have ever seen; it is simple and easily operated; it carries the dust out of the building, making it more pleasant for the operatives, therefore hands do not cost so much. As your gin has but one belt to run saws and brush it does away with the frequent lacing of a narrow brush belt. I have had considerable experience with gins and operating machinery, and have to say your machinery complete, as I have it, has not been excelled in this country yet, nor I don't think likely to be soon. I take it that if a man does anything good for his fellow man, he is entitled to his full share of the credit for the same. Consequently *R. S. Munger's head has done more to benefit the cotton producers of this country than any one head this side the river, and I take pleasure in recommending his machinery to any one embarking in the gin business.*

R. A. GRACEY (Using a 3-70 saw Outfit.)

THE MUNGER IMPROVED COTTON MACHINERY.

(Texas Farm and Ranch).

Through several issues of *Texas Farm and Ranch* it is our purpose to describe the leading manufacturing enterprises of Texas. We do this for the purpose of calling attention to the fact that Texas is rapidly becoming a manufacturing country, and to encourage the future development of the industrial spirit. We present herewith a brief description of the Munger Improved Cotton Machinery and the factory at Dallas.

Mr. R. S. Munger, the patentee, is a native of this State. At an early age he began operating a ginnery; and soon noticing the enormous amount of labor and small profits attached to this line of business, he at once devoted a portion of his time and attention to devising some means by which he could reduce expenses, save labor and improve the cotton.

This led to remodeling and improving his machinery, which, in the course of time, developed into the present perfect system of handling cotton.

His improvements attracted much attention and he at once patented them and commenced to construct other ginneries on the same plan as his own. And following the general tide of enterprise and capital he located in Dallas. Here he manufactured and sold his machinery until he found that the increased demand for his machinery was so great that he organized a stock company, embracing some of the leading capitalists and business men of Dallas. And now the new company, presents to the ginneries of the United States, the most improved means of handling seed cotton, with ample facilities to meet the enormous demand.

MUNGER IMPROVED COTTON MACHINE M'F'G CO.

(Dallas Herald, June 4, 1887).

We take pleasure in calling attention to the above corporation, which will be found of great interest to all ginneries and cotton men. This company has purchased the Munger patents on improved cotton gin machinery for the territory west of the Mississippi river. It is composed of some of the wealthiest men in the State, and known throughout Texas as men of means and push, such as Mr. J. T. Elliott, capitalist and lumber merchant; Capt

W. H. Gaston, banker; James Meroney, wholesale hardware; T. J. Oliver, banker; Hetherington and Nason, machinery and supplies; W. White, cotton factor and president of the Merchants' Exchange, representing several millions of dollars. They are all men who are successful in business, and of remarkable business thrift, and are well known throughout the State. The company, with ample means at their control, will push the business to its fullest extent, knowing that the machinery they manufacture will save millions of dollars to Texas and the South. They occupy some three acres near the Main street car line.

Their shops are immense structures two stories high, containing all the latest and most improved machinery. Their yards are stacked with the choicest lumber, and they are now making extensive additions with new and valuable machinery.

The Munger Improved machinery is too well known for us to give a description in this article, but we would suggest that you call, as they will be glad to see you, and show you every detail of their works. Mr. R. S. Munger, who is the patentee and inventor of the different articles, has spent his life as a practical ginner, and has expended thousands of dollars in bringing his machinery to its present perfection. He has his experimental rooms at all times open to anyone, as he has never tried to keep any of his discoveries a secret. He has always been perfectly free to show his improvements, and has never taken out a patent on any of his machinery until the machine had proven a success. No infringement of any other patent would ever be thought of, and none would be allowed on his valuable improvements.

The past increase of sales and popularity of Mr. Munger's inventions is but an index of what the company may expect in the largely increased sales the coming year. They manufacture everything that is required to fit up a complete modern cotton ginmery. Their works are the largest in Dallas, and they are working full force to supply the orders they are receiving.

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